CHNOLOGY DEPARTMENT

TECHNOLOGY REVIEW

November 1948

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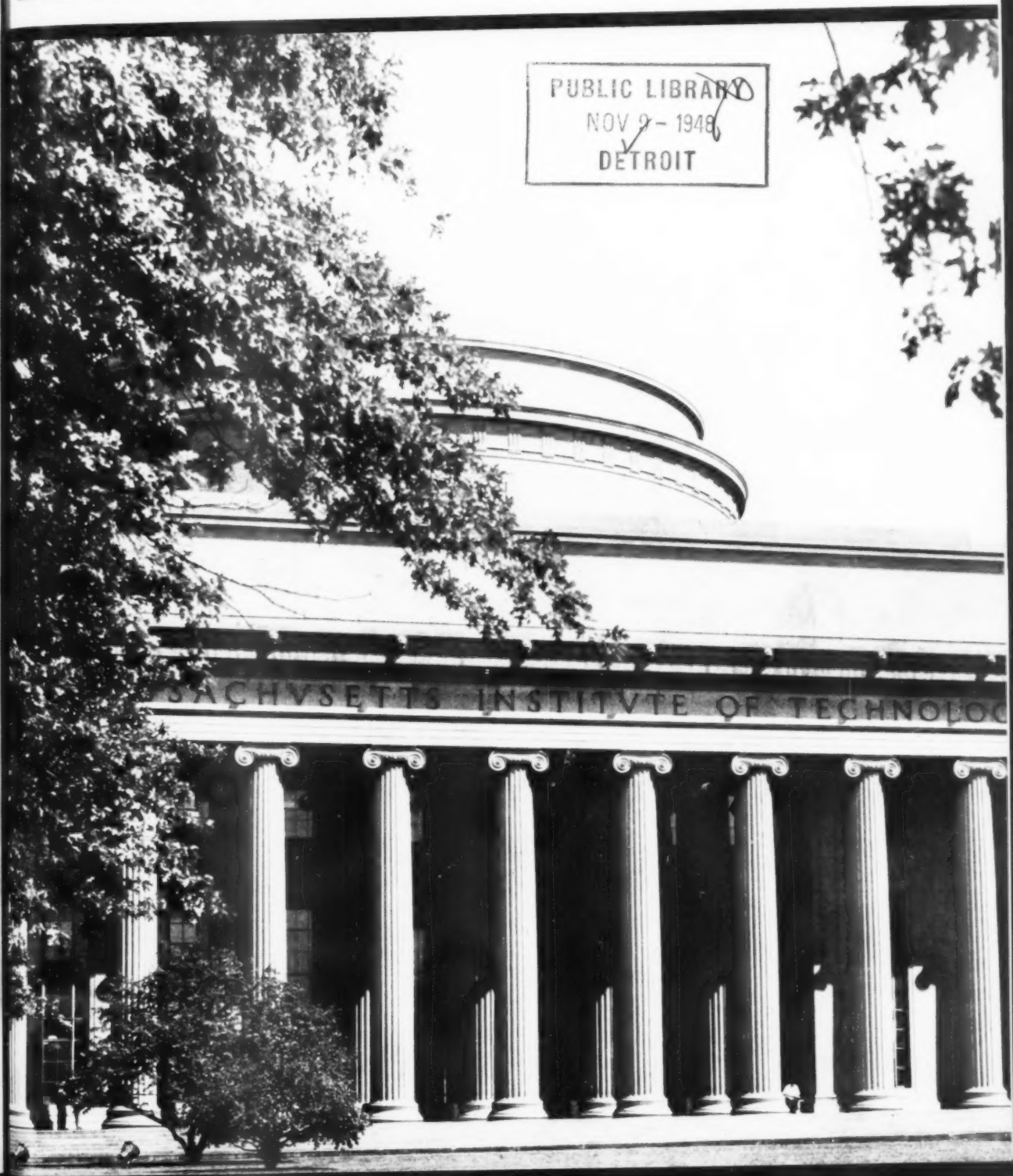
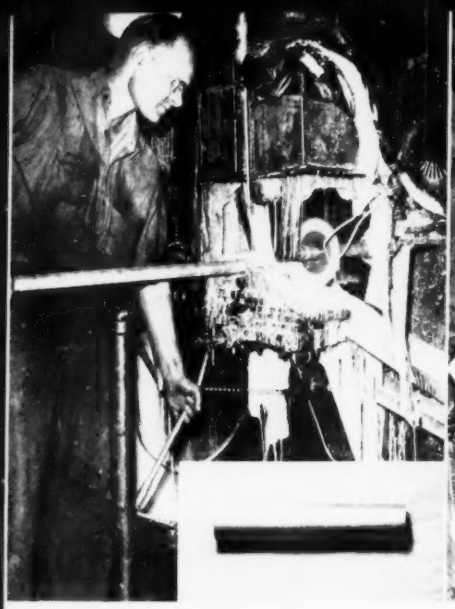
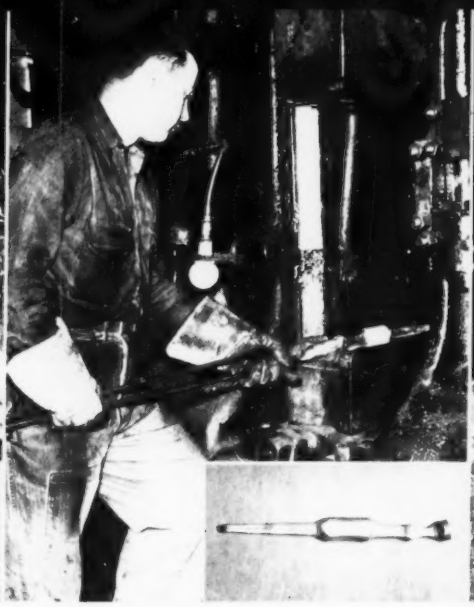
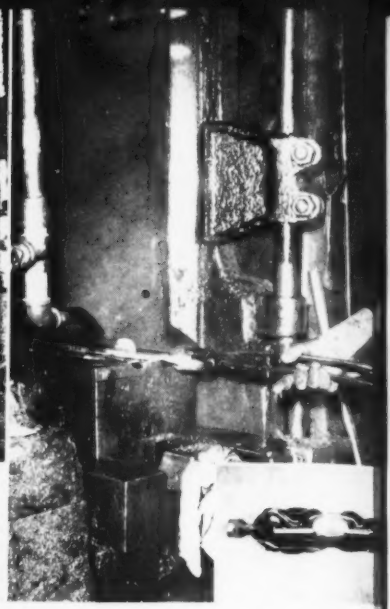




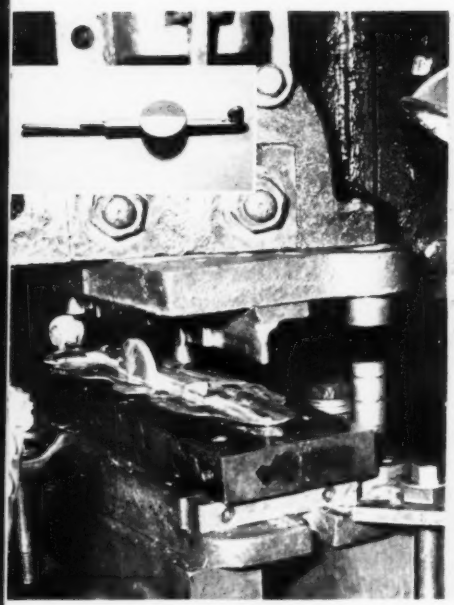
Cutting Bar



Lengthening and Shaping



Shaping to the Die



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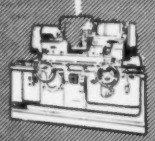
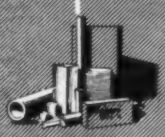


GRINDING MACHINES



REFRACTORIES

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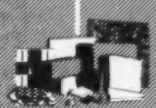

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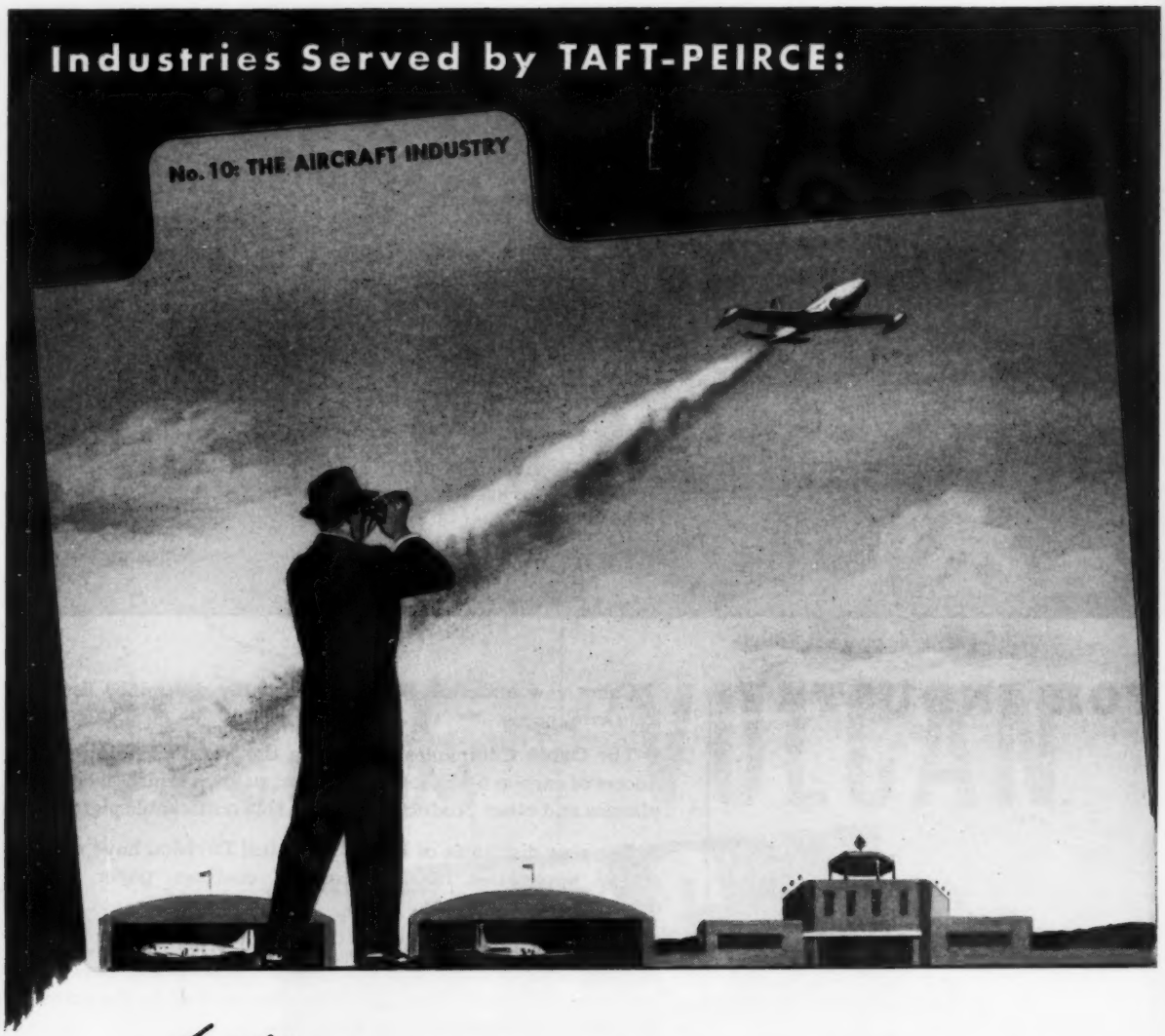

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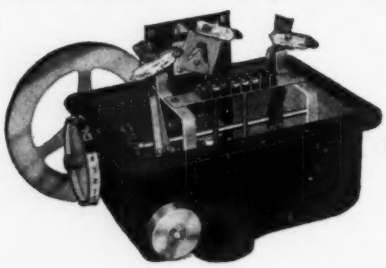

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THE TABULAR VIEW

Technical Volumes. — Many readers of The Review, who recall the late Dean Henry P. Talbot, '85, would have warmed to the reference made to him in a talk before the European graduate students in the Foreign Student Summer Project last June by JAMES S. THOMPSON, author of "Technical Publishing Today" (page 31). Mr. Thompson stated then that literally his first contact with technical authors, just after graduating from the University of Wisconsin in 1910 and joining the then infant McGraw-Hill organization, resulted in such kindly treatment and inspiring suggestions as to start a plan which culminated in the development of an international series of books in chemistry that now totals nearly 100 volumes. Currently, having resigned, at the end of 1946, from the presidency of the McGraw-Hill Book Company, Mr. Thompson is devoting his time to the broader aspects of author relationships and international contacts with editors, publishers, and educators.

International Relations. — A most interesting and unusual opportunity for 62 European students to study at M.I.T. during the summer stems from the Foreign Student Summer Project, which Earl W. Eames, Jr., a senior in Courses X and XV, initiated and for which he has served as chairman. DONALD J. EBERLY, a junior student in the Department of Physics, has been identified with the Foreign Student Summer Project and has handled its publicity since the first. Mr. Eberly tells of "A New Experiment in International Relations" beginning on page 34.

M.I.T. Expands. — The growth of the Institute, from its beginning in Cambridge in 1916 to the present time, makes an impressive story, second only to the prospects which the new era for the Institute holds. "Recent Additions to M.I.T. Building Facilities" (page 21) is the product of co-operative efforts of The Review's editorial staff.

Speed with Economy

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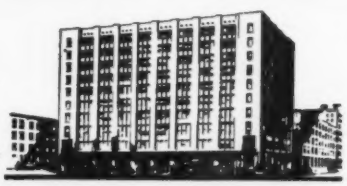

Current business trends give no reason to anticipate lower costs for the construction of industrial buildings during the next two years. So if you need a new factory, why wait?

The profit you will make on goods produced in the new factory may far exceed any saving you might make by waiting for lower costs.

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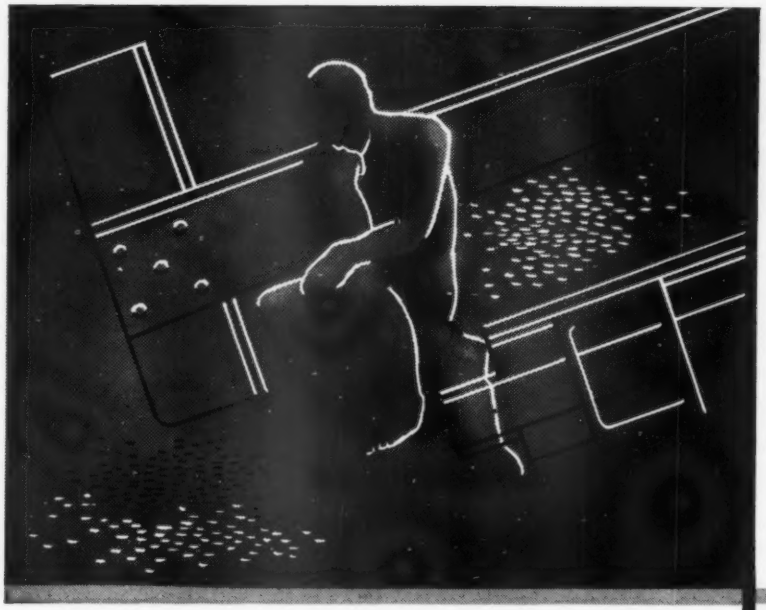

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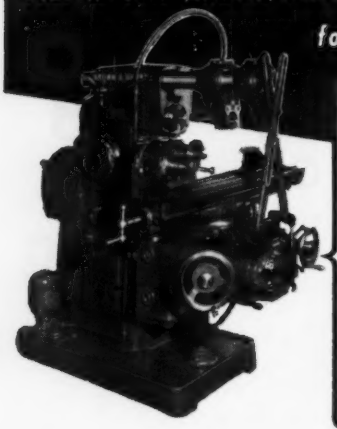

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MAIL RETURNS

M.I.T. in Tokyo

The following communication, addressed to President Compton, from an Alumnus and former member of the staff in Physics and Chemistry, is reproduced not only for its general interest to Technology Alumni but also as an indication of the prestige which the Institute has acquired under the presidency of Dr. Compton. Accompanying Dr. Ikehara's letter were two Japanese volumes describing M.I.T. and dealing with educational methods at the Institute and, to a lesser extent, with educational methods used generally in colleges of science and engineering in the United States. It is understood that these volumes have received considerable attention in educational circles in Japan.

FROM SHIKAO IKEHARA, '28:

It is more than a year since you kindly sent me a letter through Dr. Edward L. Moreland, ['07]. At that time I had the pleasure of discussing educational problems with Dr. Moreland, but since then I have been painfully conscious of lack of my knowledge on American educational systems and ideals.

In January, 1945, while the war was still on, Dr. Koroku Wada, President of the Tokyo Institute of Technology, suggested that I present a reorganization plan of our Institute. Then I immediately visualized a modest M.I.T. in Tokyo, but my plan was buried in the turmoil of the time and in its subsequent chaos. The Report of the U.S. Education Mission to Japan marked, however, a new start of our educational systems. Through painstaking efforts of the Civil Information and Education Section of GHQ., my country is slowly learning the ideal and spirit of American education. In order to reorganize the higher educational institutions, the Japanese University

(*Concluded on page 78*)

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The routine use of CAMBRIDGE Surface Pyrometers takes the guesswork out of temperature determination in many industries. The CAMBRIDGE is accurate, dependable, rugged, quick-acting and easy to use. The Roll Model is for checking surface temperatures of still or moving rolls. The Needle Model is for insertion into materials in a plastic or semi-plastic state for within-the-mass temperature determination. The Mold Model is for checking surface temperatures of mold cavities and surfaces of almost any contour.

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"—The investigation of nature is an infinite pasture-ground" — T. H. HUXLEY

Food—ours to have and to hold

QUICK-FROZEN or in cans, dried or powdered, processed or in bulk, foods can now be kept fresh and flavorful from harvest to harvest . . . or longer.

For this we can thank research . . . and *better materials.*

There's nitrogen, for example, that protects the flavor and nutritional values of packaged foods. It is also used to protect delicate foods . . . butter and vegetable oils . . . keeping them sweet and free from undesirable odors.

Plastic-lined cans resist food acids and alkalies for months on end. They eliminate all contact with metal . . . and thus serve as an added guard against flavor contamination. Plastic-treated milk bottle hoods keep pouring surfaces sterile-clean . . . and new plastic containers, tough and pliable, "seal in" food's flavor and freshness.

Stainless steel, too, easily cleaned and sterilized, gives us spoilage-free tanks, vats, hoppers, filters and great kettles that help prepare and process food for our use.

The people of Union Carbide produce many materials essential to the growing, handling and preservation of foods. They also produce hundreds of other materials for the use of science and industry, thus helping maintain American leadership in meeting the needs of mankind.

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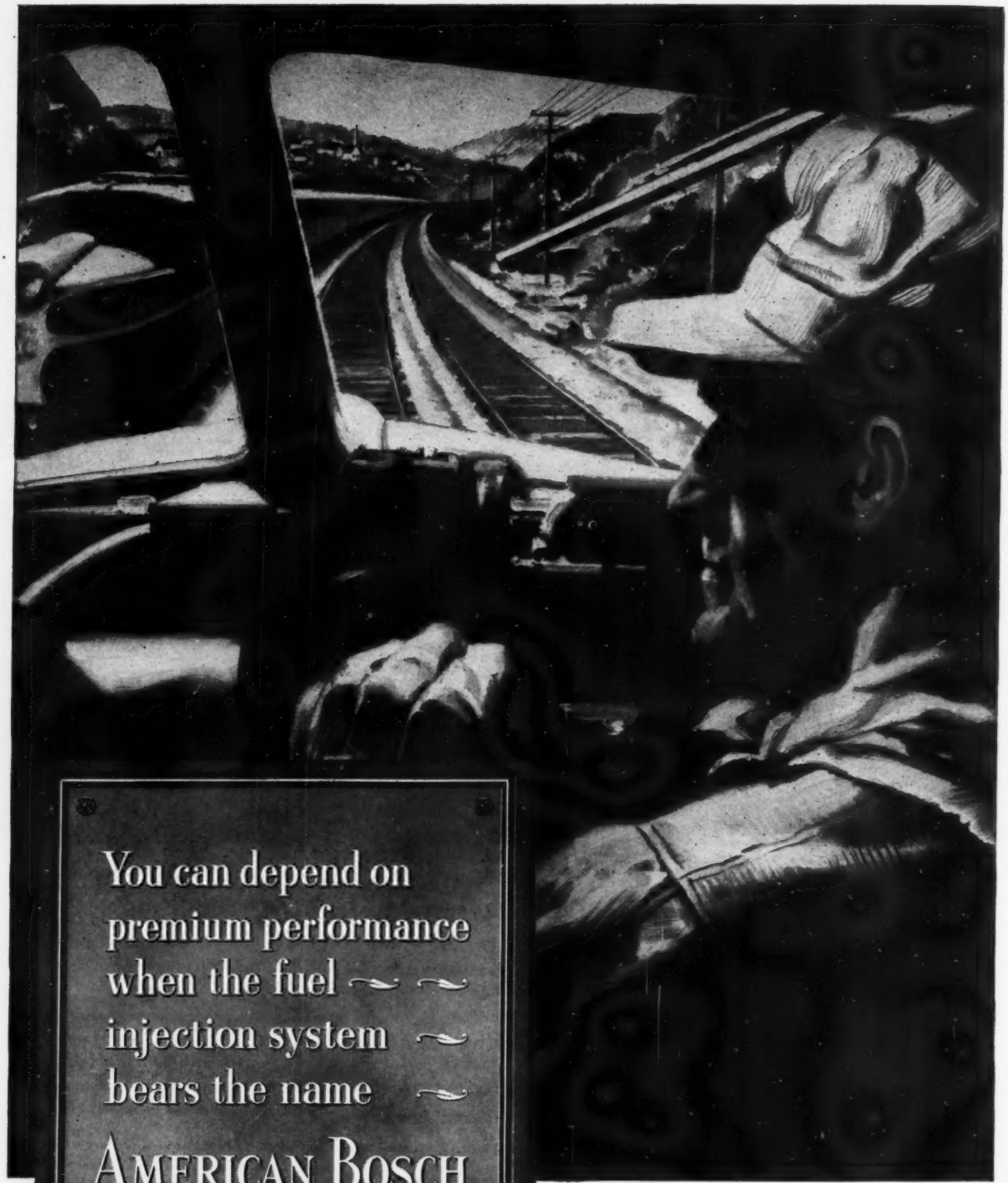

Part of a never-ending program of fuel injection research and development at American Bosch includes many thousands of hours devoted to the special requirements of Diesel locomotives.

Today, American Bosch fuel injection systems feed a high percentage of these efficient, modern giants that are taking over an ever increasing share of the load on American railroads.

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Service the Whole World Over

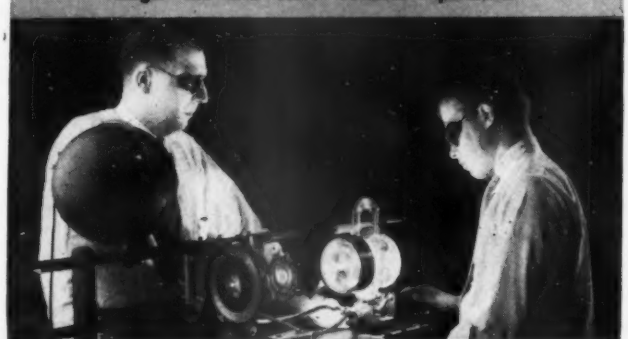
"I chose my wife, as she did her wedding gown, not for a fine glossy surface, but such qualities as would wear well . . ."

—THE VICAR OF WAKEFIELD

. . . for "such qualities as would wear well"

This electronic "sniffer" makes sure that every G-E refrigerator part is leak-proof.

High vacuums in G-E electronic tubes assure longer life and more efficient operation.



It takes 480 tests to determine whether a lamp meets General Electric standards.

THE dressmaker who pleased the vicar's wife, even as she herself pleased the vicar, did so, we submit, by a time-tested procedure: painstaking attention to the details that add up to excellence; assiduous care with the parts upon which is founded the quality of the whole.

The exacting requirements of customers like the vicar and his wife are those which General Electric products are built to meet. We feel that we could turn our wares beneath the vicar's appraising eye with equanimity.

Before the customer has a chance to examine a General Electric refrigerator, for example, specially developed electronic "sniffers" have made sure there is not the slightest leak in its refrigerating unit . . .

G-E radio tubes must pass tests that duplicate the impacts of naval broadsides and the vibrations of plane engines . . .

The General Electric lamps you see for sale have passed as many as 480 quality tests and inspections.

Every General Electric product is designed for high standards of performance . . . is tested to see that it will meet those standards . . . is built to serve you faithfully.

You can put your confidence in

GENERAL ELECTRIC

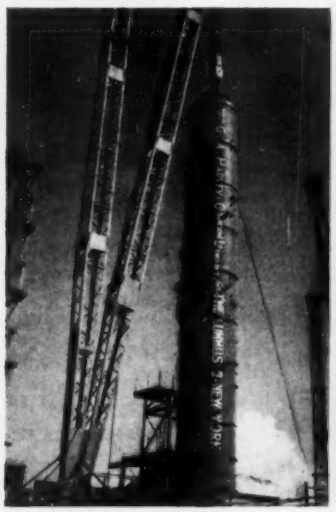
Lummus

A World-Wide Organization

Typical of Lummus foreign operations is the design and construction of a refinery by The Lummus Company of New York and Compania Anonima Venezolana Lummus for the Cardon Refinery of The Shell Oil Company of Venezuela.

In oil producing states in America, all through Europe, in the Near East, Netherlands Indies, South America, China—Lummus has built more than 150 gasoline refineries, upwards of 90 process units for solvent refining and dewaxing of lube oils and more than 300 chemical units, including complete plants for ethylene, butadiene, styrene, phenol.

A SHELL PHOTOGRAPH



Erecting fractionating column.

This large fractionating column, weighing over one hundred tons, was fabricated in England for The Lummus Company and shipped to Cardon.

A SHELL PHOTOGRAPH

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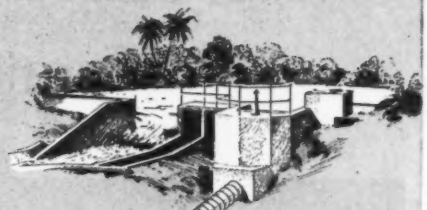
THE HARNESSING OF ROARING RIVER...



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The Hydroelectric Development on Roaring River in Jamaica, B. W. I. was designed and constructed for Jamaica Public Service Company, Ltd. to supplement their White River and Bog Walk Hydroelectric Plants. These hydro-power plants make the island largely independent of outside resources in its production of power, relieving the oil burning power plant in Kingston of a large part of its load.

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THE TECHNOLOGY REVIEW

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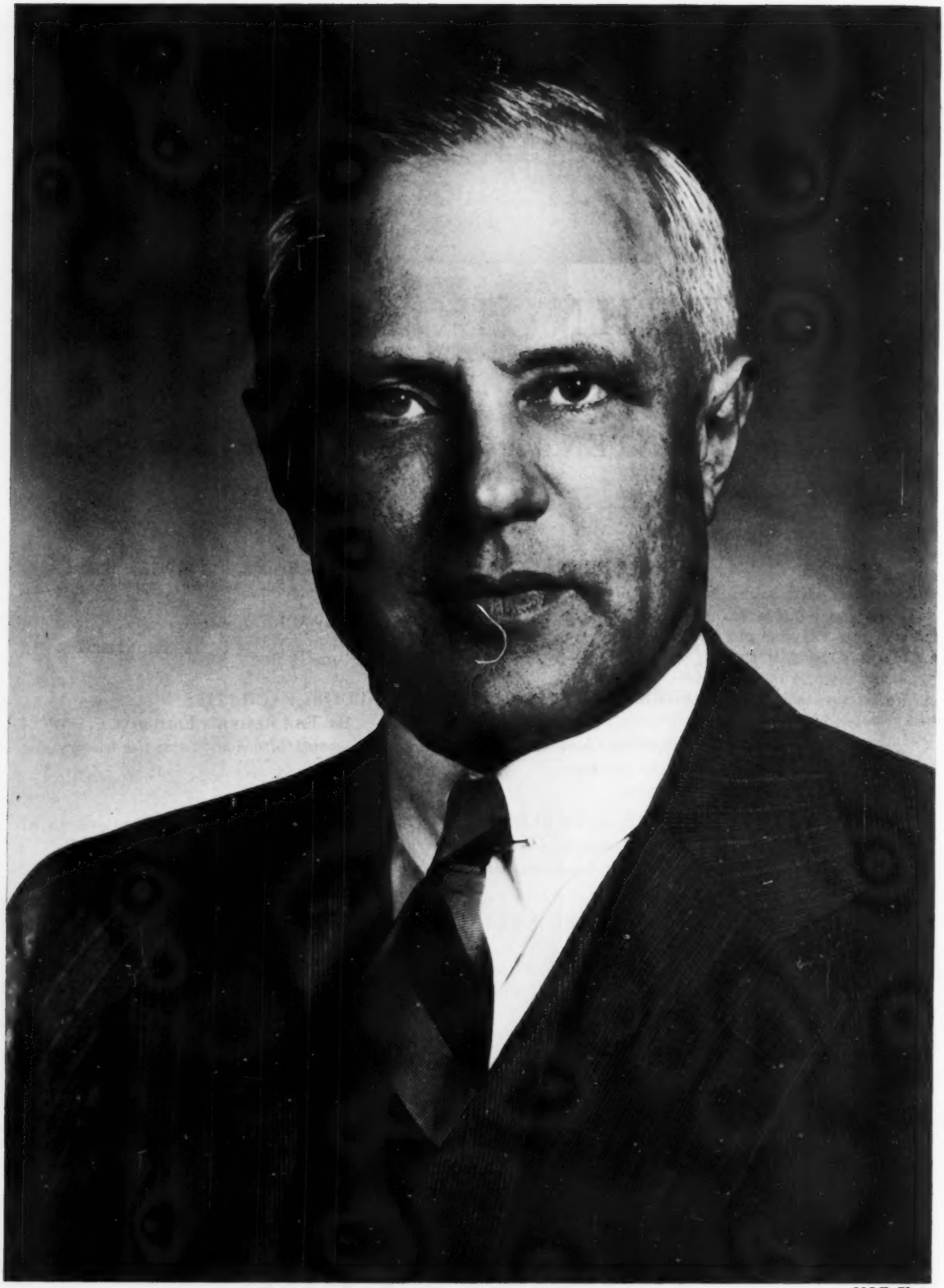


M.I.T. Photo

KARL TAYLOR COMPTON

President of the Massachusetts Institute of Technology; 1930–1948;
Chairman of the Corporation, 1948.

THE
TECHNOLOGY REVIEW

Vol. 51, No. 1 November, 1948

The Trend of Affairs

New Era for Technology

ACTING on the recommendation of Karl Taylor Compton, since 1930 President of M.I.T., the Corporation elected James Rhyne Killian, Jr., '26, to become the next, and tenth, president of the Institute, at its meeting on October 4. In his new position, Dr. Killian is the first graduate of M.I.T. to have the honor of becoming its president.

At the same meeting, Dr. Compton was elected chairman of the Corporation, and in his new capacity will continue to serve the Institute for which he has been the administrative head for the past 18 years. While Dr. Compton's new post provides relief from certain administrative responsibilities, he plans to devote full time to Institute activities, save for a special assignment in Washington for the months immediately ahead.

President Truman has appointed Dr. Compton as chairman of the Research and Development Board of the National Military Establishment. In this position he succeeds Vannevar Bush, '16, who has asked to be relieved on the ground that the chairmanship of this important office should be rotated among outstanding men instead of being held too long by any individual.

Thus it is that three men, two of them Technology Alumni, who have held the highest executive offices at M.I.T. become the logical subjects for the Trend of Affairs in opening Volume 51 of The Technology Review. The Review may, perhaps, be pardoned for taking more than usual pride in the election of the Institute's new president, for Dr. Killian began his career, immediately after his graduation from the Institute, when he was appointed assistant managing editor of The Review. He was appointed managing editor in 1927, and became editor in 1930, which, in the words of the Boston *Herald*, "he aided in making one of the country's most respected technical publications." When Dr. Bush left the Institute's vice-presidency to become president of the Carnegie Institution of Washington, Dr. Killian was selected by Dr. Compton to become executive assistant to the president in 1939. In 1943, Dr. Killian was made executive vice-president and he became vice-president in 1945. He assumed the new office as president designate on October 15. His formal inauguration as the Institute's tenth presi-

Fabian Bachrach

JAMES RHYNE KILLIAN, JR., '26

President Designate of M.I.T.

dent will take place next June in connection with commencement exercises and Alumni Day, 1949.

In making the announcement of Dr. Killian's election at a special convocation of the Faculty on October 5, Dr. Compton said:

By electing Dr. Killian to the presidency of the Massachusetts Institute of Technology, the Corporation has fulfilled the first of my two greatest ambitions for our institution. This has been to insure its future leadership of the highest possible caliber well in advance of my own retirement. Ever since the beginning of the war, Dr. Killian has carried a major portion of the duties of the President's Office with such constructive imagination, good judgment, and administrative skill as to have won the full confidence of the Corporation, staff and student body, and Alumni. The frequency with which he has been sought to advise or collaborate with outside agencies in education and public affairs, and to head other organizations, gives ample independent evidence of his qualifications.

The satisfaction and effectiveness with which our administration and staff serve M.I.T. are based on team work — the team work of highly competent men of diverse but related professional interests, bound together by common ideals of education, research and public service. I am delighted that Dr. Killian is to become the leader of this team. I am as confident of his success and loyal support by his colleagues as I am grateful to him and to them for their generous co-operation with me over more than eighteen years.

My second ambition is to do what may still be within my power to promote the usefulness of this institution and to secure the additional facilities and resources so urgently needed in these days of new technological requirements and improvements. By appointing me as its chairman, the M.I.T. Corporation gives me this great opportunity.

Dr. Killian's election at this time will permit me to devote time to the chairmanship of the Research and Development Board of the National Military Establishment, and these duties will take me to Washington for a while. I have been asked to take this assignment and conditions are such that there seems to be no proper alternative to my acceptance. I would not feel justified in doing so without having first assured the Institute's future administrative leadership.

During the war period when the scientific and engineering resources of the Institute were mobilized for service to the nation in research and special training, Dr. Compton and Dr. Killian shared the administrative responsibility of directing a vast and complex program. Under their leadership the Institute staff increased from approximately 700 to more than 6,000 scientists and engineers who were associated with the operation of war projects and special courses in various parts of the United States and many foreign countries.

Harris and Ewing

VANNEVAR BUSH, '16

Former Vice-president of Technology, whom Dr. Compton succeeds as chairman of the Research and Development Board of the National Military Establishment.

During the crucial years of World War II, it became necessary for Dr. Compton to spend a great deal of his time in government service as chief of the Office of Field Service of the Office of Scientific Research and Development, and on other scientific duties, working closely with M.I.T.'s former vice-president, Dr. Bush, the wartime head of O.S.R.D. It was during these critical years that Dr. Killian was the Institute's ranking administrative officer. For the period when President Compton was in the Philippines and in Japan, he was acting president of the Institute.

The Review joins with Technology Alumni in all parts of the world and with the Institute's Faculty and staff in wishing Dr. Killian every success in his new administrative post.

President Truman's appointment of Dr. Compton to serve the nation once again in a front-rank post in the administration of the nation's scientific man power and resources is the cause of rejoicing as well as of regret on the part of M.I.T. Alumni and Faculty. Certainly no more capable person could have been found to head the Research and Development Board of the National Military Establishment than Karl Taylor Compton. In these uncertain times, the selection of Dr. Compton as successor to Dr. Bush is doubly important, for it guarantees a continuation of the wholehearted co-operative teamwork between these two men which extends into the past for almost two decades. Dr. Compton's new duties will require that he spend a greater portion of his time in Washington than has been true in the last three years. To the extent that this is true, the Faculty and staff will miss the cordial personality that has directed M.I.T. affairs for the past 18 years. But there is also cause for rejoicing in the knowledge that Dr. Compton's new post as chairman of the Board will enable the Institute to benefit from the wise counsel, administrative leadership, and personal friendliness which have been such outstanding characteristics of the Institute's ninth president.

(Continued on page 62)

Recent Additions
TO M. I. T. BUILDING FACILITIES

A New Dormitory and an Athletic Cage
Head New Construction in the Institute's Program
for Expanded Academic, Recreational, and Residential Facilities

By *THE REVIEW'S* EDITORIAL STAFF

THIRTY-TWO years ago this autumn, upon the opening of the 1916–1917 school year, the academic activities of the Institute's student body and instructing staff, then numbering 1,957 and 331, respectively, were initially established at the Cambridge site. Except for the Department of Architecture, which was destined to remain another two decades at the old Rogers Building – the original "Tech on Boylston Street," in Boston – the transition to Cambridge was complete. Occupancy of the "New Technology on the Charles," formally dedicated with appropriate pomp and ceremony in June, 1916, was hailed rightly as signalizing the beginning of a new Institute era. For this accomplishment, praise was accorded primarily to Richard C. Maclaurin, President, and the "mysterious Mr. Smith," who was not to be publicly identified as George Eastman until the month of January, 1920.

But in the planning of the New Technology, including the provisions for its expansion, the inspiration of its architect, Welles Bosworth, '89, was clearly evidenced. The main educational structure,* which originally comprised Buildings 1, 2, 3, 4, 8, and 10, contained classrooms, laboratories, and offices for the Institute's needs as of 1916. At the time, there were but 45 students pursuing graduate courses, and the volume of research undertaken was very limited compared with present-day standards. Bosworth's vision, however, contemplated harmonious development as expansion became necessary. The main group of buildings was planned for expansion through the addition of connecting structures (such as Buildings 5, 6, and 7), and by extending wings northward, beyond the east-west axis of the great dome of Building 10. In the Bosworth plan, all buildings were to be connected under one roof.

Nor had student housing and recreational needs been neglected. The Institute's first dormitory – Ware, Atkinson, Runkle, Holman, Nichols, and Craft – accommodating approximately 225 students was completed in 1916. This L-shaped dormitory looked out onto the Charles River, and over the garden of the president's house. A near-by quarter-mile running track, with a field house topped by a modest grandstand, was also available for use in the autumn of 1916; but construction on the president's house and the adjacent Walker Memorial was not completed until the spring of 1917. The Walker Memorial (funds for which had derived in large part from contributions by Alumni) was destined to become the center of undergraduate life, with facilities for dining and lounging, offices for student publications and other activities, a library, and a gymnasium. Immediately upon its completion, however, it was put to another use, serving as the *U.S.S. Walker Memorial* for the training of aviation cadets of the United States Navy until after the armistice of 1918.

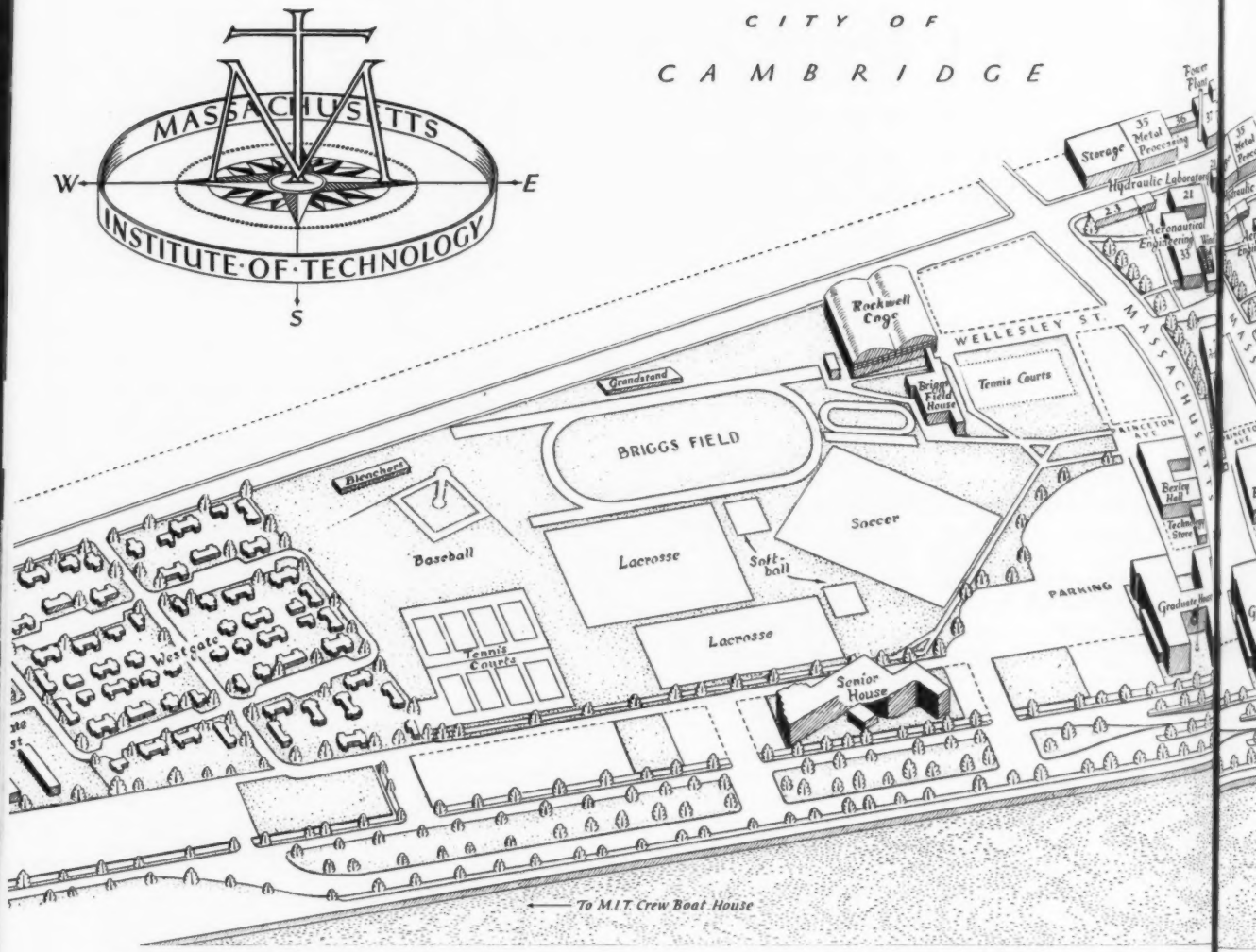
During World War I, also, much of Building 1 was devoted to ground-training units of air service personnel of the Army; and in the rear of Building 10 a number of temporary wooden buildings were erected for various war purposes. One of these, more sturdy and lasting than supposedly intended, later became the so-called Hangar Gymnasium, which was not torn down until early in World War II to give space for Building 24, erected for the Radiation Laboratory.

Upon the close of World War I, the country-wide recognition of the growing importance of technological education in an industrial economy, together with the achievements of M.I.T. and its Alumni in that conflict, was quickly reflected in an increase of registration to more than 3,000 students – more than half again as much as the 1916 figure. Coincidentally, there was a need for increasing the Institute's financial resources, and this was accomplished by the successful $8,000,000 Educational Endowment Fund of 1919–1920, more than half of which was contributed by George Eastman who was at last revealed as the beneficent "Mr. Smith."

In 1920, the Pratt School of Naval Architecture and Marine Engineering (Building 5) was added; and in 1921 the Hydraulic Laboratory (Building 21) was completed. At the same time, to insure against needs of the future, needs not at the time specifically foreseeable, attention was turned to the feasibility of enlarging the area of the original Cambridge property. Thus, in 1924 some 24 acres west of Massachusetts Avenue were purchased.† The new area was about half

* As a means of orientation, the aerial perspective sketch of M.I.T. (pages 22 and 23) will give the reader a good summary of present and projected construction, whereas the Table of Building Construction (page 24) will supplement the map by indicating the present purpose and use of M.I.T. structures, and will also indicate the year in which construction was completed or units were acquired for their present use.

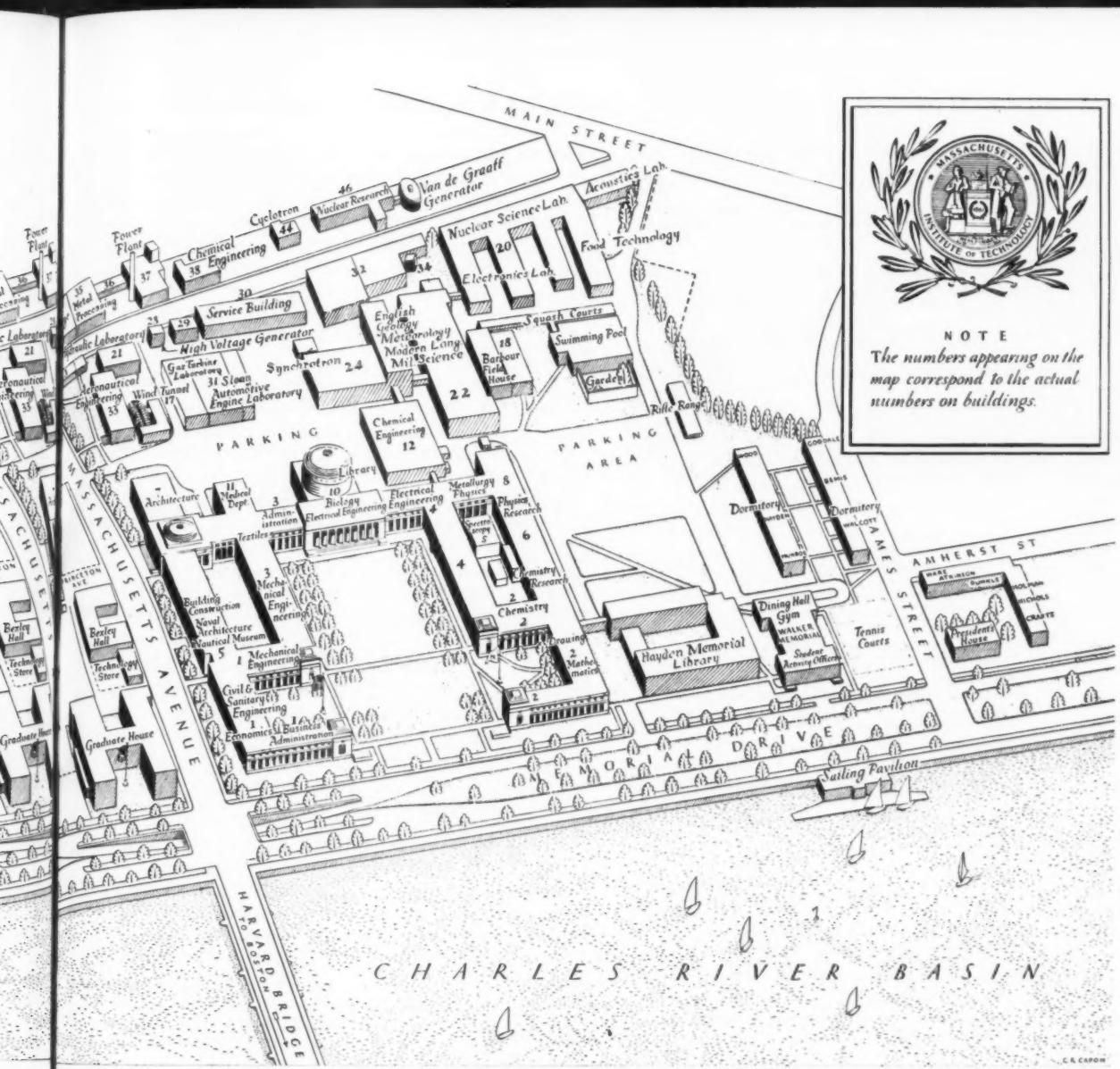
† By the early 1930's, total Institute property west of Massachusetts Avenue was 40 acres.



Aerial perspective diagram of the western portion of Institute property along Memorial Drive, now planned largely for residence, recreational, and athletic needs for the Institute's growing needs.

of the original Cambridge tract of approximately 50 acres lying east of the Avenue. Other additions to the plant during the 1920's were: the Bemis dormitory unit in 1924 (later supplemented by Goodale and Walcott in 1928, and Wood, Hayden, and Munroe in 1931) to provide housing accommodations for 483 students, in addition to the 225 housed in the first L-shaped dormitory; the Homberg Infirmary wing (Building 11); and the Guggenheim Aeronautical Laboratory (Building 33) in 1928.

Following the completion of the George Eastman Research Laboratories of Physics and Chemistry (Building 6) in 1932, construction of major new units was suspended for six years. In 1937, however, the Riverbank Court Hotel was acquired by purchase and converted into the Graduate House, accommodating 350–400 civilian advanced students. (During World War II, when it was used by the Navy V-12 Unit, its wartime capacity was raised to 900.) In 1938, the proceeds from the sale of the Rogers and Walker buildings on Boylston Street made possible the erection of a new Rogers Building (Building 7) to house the School of Architecture, and bring all of M.I.T.'s year-round academic activities to Cambridge. The new Rogers Building, moreover, gave the Institute an appropriate imposing entrance on its Massachusetts Avenue façade, in replacement of the undignified basement entry, officially designated by its street number, 69, but conversationally alluded to, by those who used it not infrequently, as the unaesthetic "family entrance." In the same year, 1938, the Wright Brothers Memorial Wind Tunnel and the building for the cyclotron were completed. The Hyams High Voltage Laboratory and the first Solar Energy Laboratory were completed in 1939, and the Bexley Hall apartment building was purchased also in 1939. This four-story brick structure, containing 48 housekeeping suites, was the Institute's first provision for offering much needed living quarters to younger married members of the rapidly expanding staff.



The eastern portion of Institute property along Memorial Drive. It is here, adjacent to the original group of Cambridge buildings, that fuure additions to academic buildings will be made.

As to recreational, sport, and athletic facilities, it may be recalled that the Barbour Field House, providing locker rooms, showers, and squash courts, came into use in 1934. Five years later, in 1939, the Briggs Field House, west of Massachusetts Avenue, was completed as an athletic center for track and other field sports. In 1936, the Sailing Pavilion was finished and equipped with a fleet of dinghies. It is largely because of the popular support of dinghy sailing that intercollegiate sailing in this country was revived, and enabled one M.I.T. student to finish second in the 1948 Olympic sailing races. The Alumni Pool, opened in 1940, offered M.I.T. students, for the first time, an opportunity to engage in swimming with facilities adjacent to the main buildings and dormitories.

Scarcely had World War II begun in September, 1939, than it became apparent that the Institute would be destined, almost immediately, to play an exceedingly important and active role in research and the training of scientific and engineering personnel to insure the nation's welfare and security. The demands were urgent and it became clear that the Institute's prewar plant would be inadequate for the Herculean task so ably recorded in the recently published volume by John E. Burchard, '23, *Q.E.D. – M.I.T. in World War II.*

Construction During World War II

Thus, during the early 1940's and at quickened tempo after the Pearl Harbor attack, there arose on Institute property a substantial number of new structures. The Sloan Automotive Laboratory was enlarged in 1940, in time for the conduct of important war research. Building 12, which had previously been planned as new quarters for the Department of Chemical Engineering, was hurried to completion in 1941 and during the war was under lease to the Chemical Warfare Service of the United States Army for research purposes. Building 32, a large wooden structure on Vassar Street, was likewise completed in

CHRONOLOGY OF M.I.T. BUILDING CONSTRUCTION

ACADEMIC BUILDINGS

DESIGNATION	PRESENT USE OR PURPOSE	YEAR*
1: Henry L. Pierce Engineering Laboratory	Departments of: Civil and Sanitary Engineering; Mechanical Engineering; Business and Engineering Administration; Economics and Social Science	1916
2	Department of Mathematics; Section of Graphics; undergraduate instruction in chemistry, drawing, mathematics; Hobby Shop	1916
3	Offices of the president, Corporation, deans, administration, admissions; Mechanical Engineering laboratories	1916
4	Undergraduate instruction in physics, chemistry, electrical engineering, dielectric research; Bursar's Office	1916
5: Pratt School of Naval Architecture	Department of Naval Architecture and Marine Engineering; Dewey Library; Division of Industrial Co-operation	1920
6: George Eastman Research Laboratories	Department of Physics; Spectroscopy Laboratory; Eastman Library; research in physics and chemistry	1932
7: Rogers Building	School of Architecture: Emerson Room; Rotch Library. Departments of: City and Regional Planning; Building and Engineering Construction. Dard Hunter Paper Museum; Center of Analysis; Offices of information, registration, dean of students, Alumni Association	1938
8	Department of Metallurgy; Lindgren Library; instruction in physics and metallurgy	1916
10	Departments of: Electrical Engineering; Biology. Central Library; Vail Library; electrical engineering power and communication laboratories; general science; general engineering	1916
11: Homberg Infirmary	Medical Department Alterations	1928 1945
12	Department of Chemical Engineering; instruction and research in chemical engineering	1941
17: Wright Brothers Memorial Wind Tunnel	Research and instruction in aeronautics and aeronautical engineering Addition to Building 17	1938 1943
18	Sonar Laboratory; temporary war research building for training of Navy personnel	1943
20	Temporary war research building now used for educational and research program; Electronics Laboratory; Laboratory of Nuclear Science and Engineering	1943
21	Hydraulic Laboratory	1921
22	Temporary war research laboratory converted into student barracks	1942
23	Temporary war research building for flutter research	1942
24	Departments of: English and History; Modern Languages; Geology; Military Science and Tactics. Superintendent's Office; research in x-rays; the synchrotron	1942
28: Hvams High-Voltage Laboratory	Research in high-voltage radiography	1939
29: Tractor House	Garage	1923
30	Service Building	1920
31: Sloan Automotive and Aircraft Engine Laboratory.	Research in automotive and airplane engines Enlargement of Building 31	1928 1940 and 1946
31-A: Gas Turbine Laboratory	Research and instruction in gas turbines	1947
32	Temporary war research laboratory; now used for educational and research program in servomechanisms	1941
33: Guggenheim Aeronautical Laboratory	Department of Aeronautical Engineering; Aeronautical Library	1928
34	Original Solar Energy Laboratory	1939
35	Metal Processing Laboratory	1916
36	Garage	1916
37	Power Plant	1916
38	Chemical Engineering	1916
44	Cyclotron Laboratory	1938
46	Nuclear research; Van de Graaff high-voltage electrostatic generator Addition to Building 46	1933 1943
Charles Hayden Memorial Library	Main Library; center for cultural studies and activities	Under Construction
Supersonic Wind Tunnel	Research in aeronautics; Navy owned, M.I.T. operated	1948
New Solar Energy Laboratory	Research on energy from the sun	1946
Hood Building	D.I.C. Research on government projects, including instrumentation	1942
Barta Press Building	D.I.C. Research on digital computers	1947
Crystal Farm	Geology Field Station, Nova Scotia. Used by but not owned by M.I.T.	1947
Round Hill Estate	Research	1948
Camp Technology	Summer camp for students in surveying at Gardner Lake, East Machias, Maine	1912
12-million Volt Generator	High-voltage research	Under Construction

RESIDENTIAL BUILDINGS

Atkinson	Dormitory — now used as Senior House	1916
Craft	Dormitory — now used as Senior House	1916
Holman	Dormitory — now used as Senior House	1916
Nichols	Dormitory — now used as Senior House	1916
Runkle	Dormitory — now used as Senior House	1916
Ware	Dormitory — now used as Senior House	1916
President's House	Residence of M.I.T. president	1917
Bemis	Undergraduate dormitory	1924
Goodale	Undergraduate dormitory	1928
Walcott	Undergraduate dormitory	1928
Hayden	Undergraduate dormitory	1931
Munroe	Undergraduate dormitory	1931
Wood	Undergraduate dormitory	1931
Graduate House	Formerly, Riverbank Court Hotel — now used as residence for graduate students	1937
Bexley Hall	Apartment residence for Faculty and staff. Investment; not campus property	1939
Westgate	Single and double cottages for 100 married students	1945
Westgate West	Two-story temporary quarters for 180 married students	1946
Senior House	Dormitory for seniors	Under Construction

RECREATIONAL, SPORT, AND ATHLETIC FACILITIES

Walker Memorial	Morss Dining Hall; offices for student government and extracurricular activities; Pritchett Lounge; Walker Library; gymnasium; handball courts; bowling alleys	1917
Boathouse	Shells and rowing equipment for crew	1922
Barbour Field House	Squash courts, locker rooms, showers	1934
Sailing Pavilion	M.I.T. Nautical Association; dinghy and sloop sailing	1936
Briggs Field House	Athletic center for track and other field sports; lockers, showers	1939
Alumni Pool	Swimming pool	1940
Rockwell Athletic Cage	Enclosed track and cages for indoor sports and competitions	1948

PROJECTED CONSTRUCTION

Metals Processing Laboratory

Biology and Food Technology Building

Laboratory for Nuclear Science and Engineering

Towing Tank and Hydrodynamics Laboratory

Faculty Club

* Date given is the year in which property was built or acquired for present use as indicated in the center column.

1941 and used for research during the war. Building 24, a six-story brick structure almost directly north of the large dome of Building 10 was erected in 1942 for the Radiation Laboratory. As the activities of the Radiation Laboratory expanded, temporary wooden Buildings 22 and 23 were added in 1942, and Buildings 18 and 20 followed the next year. These structures continue to be used for the instruction and overflow housing of the enlarged postwar student body, and for the conduct of many sponsored research projects. Also during 1942, the Hood Building at 155 Massachusetts Avenue was rented for war research, and the hangar at the Bedford Airport was made available to M.I.T. for similar use. The Wright Brothers Memorial Wind Tunnel in Building 17 was enlarged in 1943, as were also the facilities of the Homberg Infirmary two years later.

Such a review of the progressive physical development of the New Technology, up to the close of World War II, provides a background basis for long-range planning studies carried on in connection with postwar conversion. These studies have led to a fundamental conclusion which may be summarized as follows: the land area east of Massachusetts Avenue will be reserved for the future expansion of academic buildings, whereas that land west of the Avenue is to be developed for the housing, recreational, sport, and athletic needs of the Institute's growing body of students, Faculty, and staff.

Postwar Housing

Immediately after the war, when it became evident that many veterans would return for continuation of their interrupted studies, 100 small houses (50 with one bedroom and 50 with two bedrooms) were erected on Memorial Drive about half a mile west of Massachusetts Avenue. The houses were arranged in single and twin units. This development, known as Westgate, accommodates 100 married couples in temporary buildings which, it seems at present, may outlive their originally estimated life of five years. Just west of Westgate is a group of two-story wooden buildings (formerly used by the Navy) serving as temporary apartments for 180 married couples..

Of course not all students live on the west side of Massachusetts Avenue; some live at home, others at fraternities in Cambridge and near-by Boston; and the dormitories east of Massachusetts Avenue, erected between 1916 and 1931, also do a thriving business. In addition, Building 22, one of the temporary buildings erected for war research and adjacent to the old Radiation Laboratory, has been converted into a barracks for 600 students under the present and very urgent need for adequate housing of the student body.

But if the Institute's housing units, like those of any other modern community, appear to be bursting at the seams, it is pleasant to be able to record that relief is in sight. As chronicled in past issues of The Review, a new Senior House for 362 students has been planned, and is now nearing completion on Institute property on Memorial Drive, between Danforth and Endicott Streets.

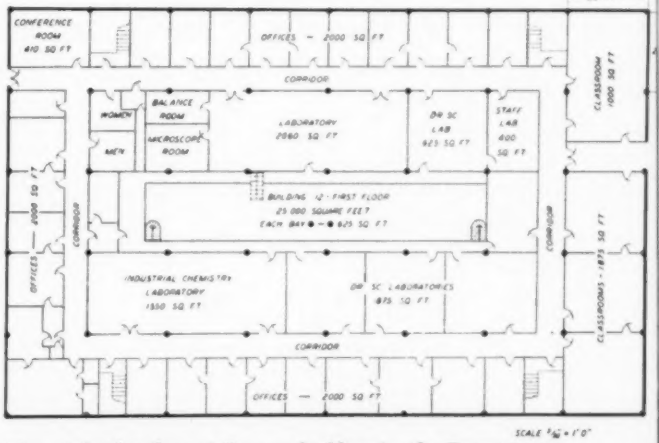
M.I.T. Photo

Erected during the war and used for research by Chemical Warfare Service, Building 12 provides excellent laboratory and classroom facilities for the Department of Chemical Engineering. Building 10 is at the right.

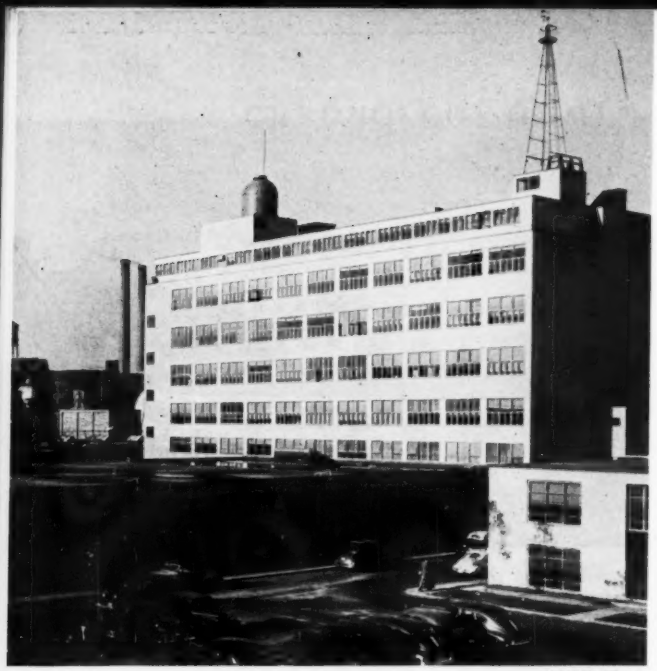
Senior House

The new Senior House was designed by the well-known Finnish architect, Alvar Aalto, Visiting Professor of Architecture at M.I.T. Perry, Shaw, and Hepburn, with Robert C. Dean, '26, in charge, are supervising architects, and the Aberthaw Company is the contractor. Like the original academic buildings of M.I.T., completed in 1916, the new Senior House represents the most modern advances in architecture and building construction known at the time of construction.

The basic thought underlying Professor Aalto's design is that students living in college dormitories should be provided with the best possible environment for effective work and group living. In accordance with this objective, a design has been evolved which provides a view of the Charles River Basin and of Boston from most of the rooms in the new dormitory. In order to have as many rooms as possible face the Charles River, the dormitory has been arranged in a combination of zigzag and serpentine form which provides a maximum southerly exposure.



Plan of the first floor of the new building for the Department of Chemical Engineering.



M.I.T. Photo

Erected and used during the war for the M.I.T. Radiation Laboratory, Building 24, highest on the Institute lot, now houses the Departments of Meteorology, Geology, English and History, and Modern Languages. It also serves as headquarters for the Department of Military Science and Tactics, and for the superintendent of buildings.

About 65 rooms, as well as the corridors, stairways, bathrooms, lounging rooms, and general living areas have been provided on the north side of the building overlooking the playing fields.

The Senior House is six stories high. On the ground floor are provided a lounge, dining room, music rooms, club room, and hobby room. On the first floor are arranged the principal lounge, the balcony of the dining room, which is a portion of the lounge space, the offices, the director's suite, and typical students' rooms as shown in the floor plan on page 28. The second and upper floors are all similar in their arrangement of student rooms, having almost all individual rooms on the south or River side, and collective living rooms on the north side.

On a typical floor, the rooms are divided (as shown in the floor plan on page 28) into several groups. Certain large rooms provide for three students each; other rooms provide for two students each, and there are a large number of rooms for single occupants.

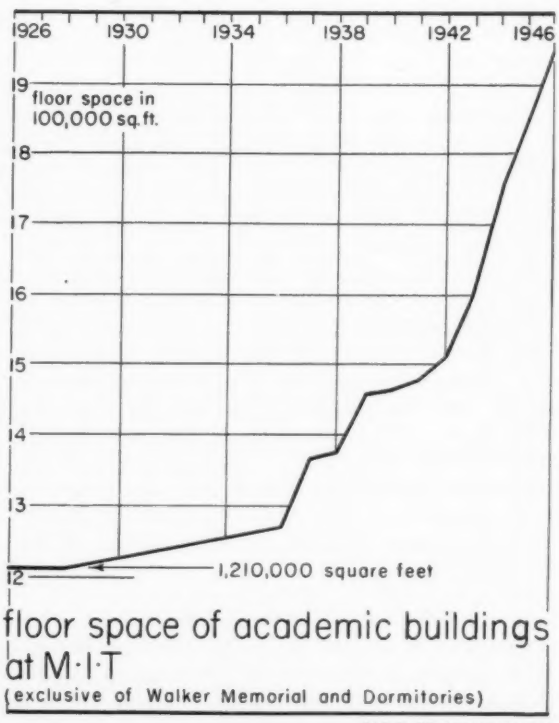
A single room will provide each man with a built-in desk, book shelves, couch, wardrobe, lavatory, and bed. All furniture, with the exception of the chairs, is especially designed for the room and is built-in, of light, blond hardwood, contrasting with the red tile walls. Acoustic ceilings and asphalt-tile floors soften sounds, and improve the general appearance.

A double room is merely an enlargement of the facilities provided by three single rooms; a room housing three men provides the same facilities and, in addition, has a living space devoted principally to the use of the three occupants. Outside the student rooms, and occurring generally as an enlargement of the corridor, are living areas which will be attractively furnished with living room furniture, providing a space where general discussions can be carried on without interference with study in individual rooms. The dining room on the ground floor is an especially pleasant feature, with two sides standing free from the building and provided with its own sunken garden and view of the River. The balcony around this dining room, at the first floor level, makes an extension of the main lounge. The dining room will be lighted by numerous round skylights, especially designed for the room, which will provide a down light both by day and, with the use of artificial light, by night. The latest in kitchen equipment will be provided to serve the dining room and its terraces.

One of the interesting features of the building is the long cantilevered stairway which hangs from the north wall, allowing the students continuous travel by easy stages to each of the six floors. The building is also provided with an elevator and other stairways of more conventional type. The outside of the building is to be built of red brick to harmonize with the other buildings in this section of Memorial Drive.

Alumni Participation

The Corporation had earmarked $1,700,000 for construction of the Senior House, which appeared to be an appropriate capital investment for the amount of income to be expected from the new dormitory. The estimated cost of construction, however, was in excess of $2,000,000 and, for a time, it looked as if this new housing unit would have to be indefinitely postponed. It was at this point that Francis J. Chesterman, '05, then chairman of the Alumni Fund Board, ob-



M.I.T. Illustration Service

Floor space of academic buildings at the Institute in the past decade and a half approximates an exponential growth curve.

tained approval of that Board to make available to the Corporation a gift of $500,000 from the Alumni to be used in the construction of the new Senior House. Announcement of this gift was made by Mr. Chesterman at the Alumni Banquet on June 14, 1947, as recorded on page 537 of the July, 1947, Review. Construction of the new housing unit was thereby definitely assured, and ground was broken for the new dormitory on the following October 6, as recorded on pages 40 and 42 of the November Review, and on page 105 of the December issue.

Although the Senior House faces the Charles River, entrance to the building will be from the north side, adjacent to the athletic field. The front of the building presents the appearance of being built in smooth curves. Actually, however, curved steel beams would have increased the construction out of proportion to the benefits to be gained, and all steelwork uses straight I beams. The serpentine effect on the Memorial Drive side is not carried out on the north side, which has more conventional lines.

If the academic and housing quarters have been augmented during the past years, the same may be said of the athletic and recreational facilities.

Rockwell Athletic Cage

Latest addition to the physical facilities of the Institute, in furthering its program of physical education, intramural sports, and varsity competition, is the Rockwell Athletic Cage which, as recorded in the July, 1948, issue of The Review, was dedicated last June 12 as part of the Alumni Day ceremonies. This new unit has been named in honor of Dr. John A. Rockwell, '96, who served for half a century on the Alumni Advisory Council on Athletics, and was its chairman from 1914 until 1947 when this Council was succeeded by the Athletic Board.

Fortunately, the Rockwell Athletic Cage is made available just at the time when the Institute's expanded program of athletics and enlarged student body will be able to make the most effective use of it, and the building comes to Technology in a somewhat unusual way.

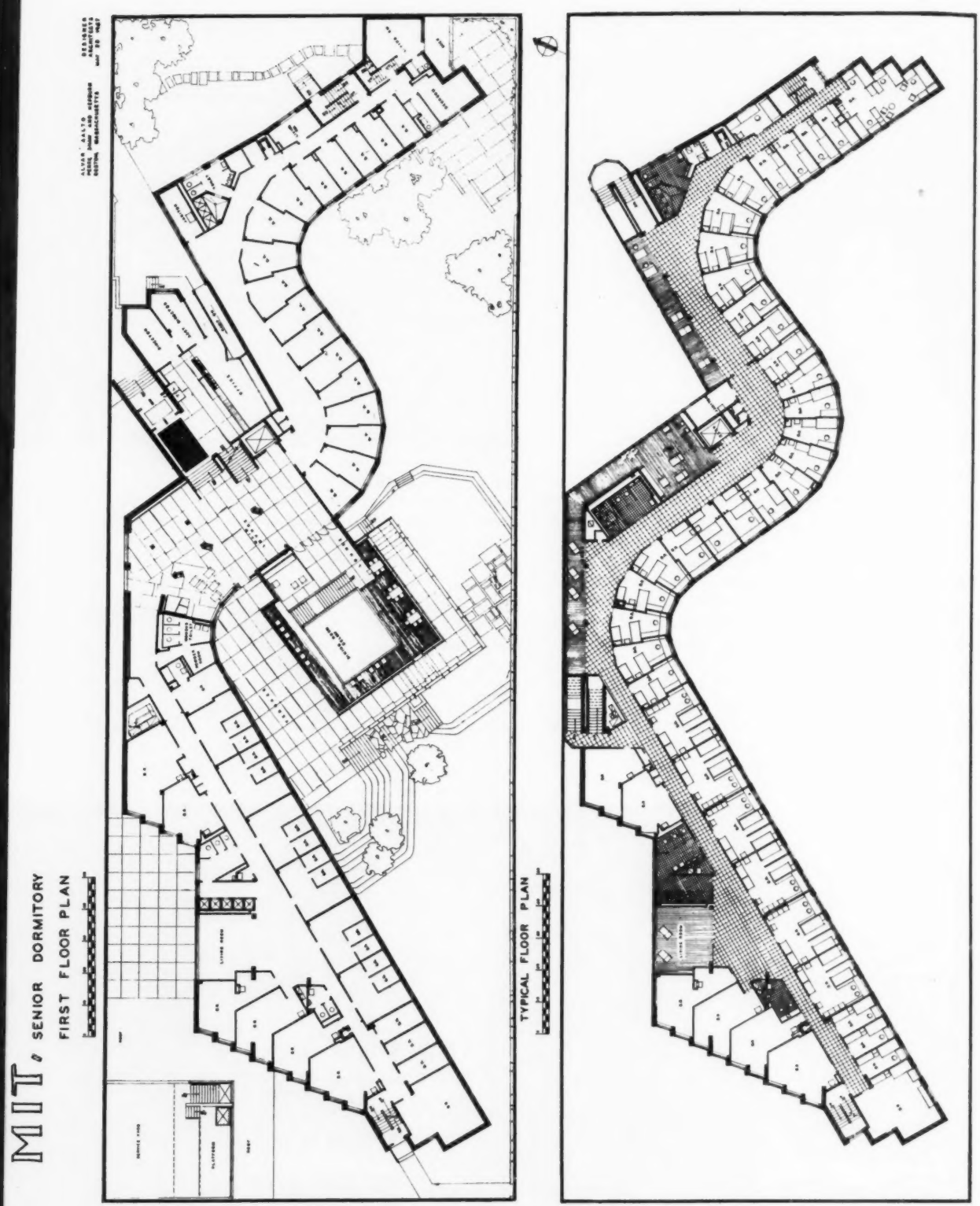
Upon conclusion of World War II, one of the Navy's recreation and drill halls at Camp Peary, Va., was among wartime equipment to be declared surplus material by the War Assets Administration. This hall was ideally suited to the needs of the Institute's growing athletic program, and was acquired from the Government in the spring of 1947. Since the new cage was intended to be a permanent addition to the Institute's buildings, it was decided that the wooden side walls of the original Navy recreation hall should take on a more permanent form. Accordingly, only the large arched wooden girders and roof timbers were transported from Camp Peary to Institute property in Cambridge by Navy barges during the summer and early fall of 1947.

While this work was in progress, plans were being made for the new Rockwell Athletic Cage which was to be located on Vassar Street, adjacent to and connecting the Briggs Field House.

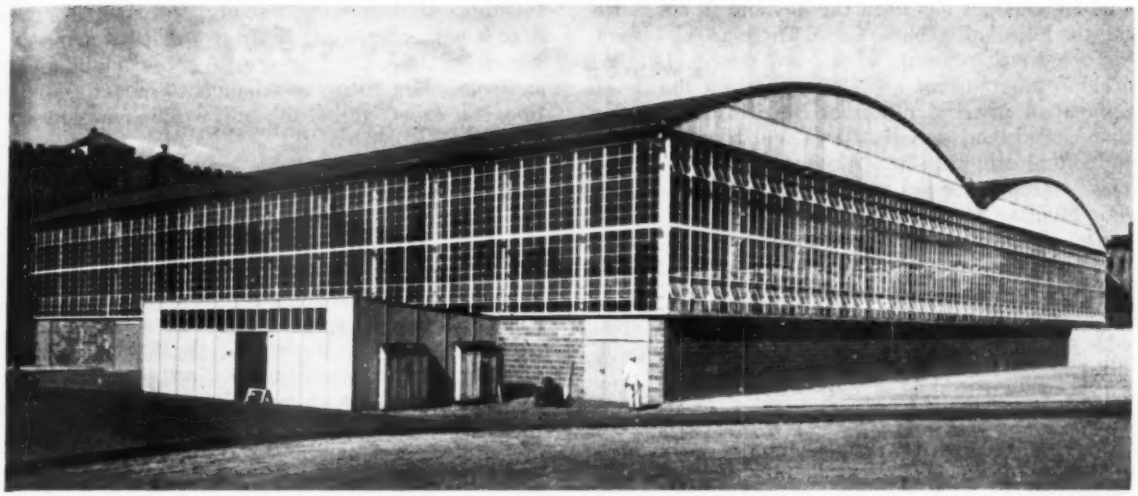
The Rockwell Athletic Cage now offers facilities for indoor athletics never before available at M.I.T. The cage is 200 feet long and 165 feet wide with an inside height (to the bottom of the arched girders) of 30 feet. The sides of the cage are of cinder-block construction for a height of 9 feet, above which the remaining 21 feet of wall is of clear, plain glass with steel encasements or frames. At the sides and in the center of the cage are steel beams which divide the cage into two equal parts, 100 feet by 165 feet each and support the 100-foot arched roof trusses. As a result of this construction, which provides two large

A view of the new Senior House on Memorial Drive, slightly more than a block west of Massachusetts Avenue, as photographed during construction late in September. Original design is by Alvar Aalto. Consulting architects are Perry, Shaw, and Hepburn, with Robert C. Dean, '26, assuming charge for this new dormitory. Aberthaw Company is the contractor.

M.I.T. Photo



Ground floor plan (left) *and typical upper floor plan* (right) *of the new Senior House now being completed as an important addition to the Institute's dormitory facilities for students. In an attempt to provide as many rooms as possible with a view along the Charles River and toward metropolitan Boston, a serpentine effect, deviating from traditional architecture, has been adopted. It is expected that rooms will be available for occupancy by 362 seniors by the beginning of the spring term, although the dining room and certain other service facilities may not be completed until the summer.*



M.I.T. Photo

The Rockwell Athletic Cage provides a well-lighted and heated area 165 by 200 by 30 feet for student use for indoor athletic events. The cage is divided in the center to make two areas, each with a floor space of 100 by 165 feet. In the near half is a one-twelfth mile track, shot put circle, and pits for broad and high jumping. In the distant half, which is caged in, are facilities for indoor baseball, soccer, volley ball, badminton, and golf driving, through the use of nets or cages which may be quickly strung up or removed.

recreational fields, the cage is well lighted throughout the day by natural light. For late afternoon or evening use, there are 83 direct-lighting fixtures of 1,000 watts each which provide diffuse and even illumination of 20- to 25-foot candles at all portions of the cage.

The floor or deck of the cage is a mixture of clay and loam, an approved material for cage or field purposes. When necessary, the temperature of the cage may be kept to 60 degrees F. by means of six hot-water coils and electric fans which circulate warm air from units affixed to the ceiling. The boiler room is adjacent to the cage on the east side.

The cage is connected to Briggs Field House where lockers and showers are installed; it will also be connected with the Massachusetts State Armory of the National Guard. The Armory is used in the Institute's Reserve Officers' Training Corps program, and the Briggs Field House provides headquarters, dressing rooms, showers, and similar facilities for students taking part in activities on the athletic field. At present, there are no lockers in the Rockwell Cage, although plans are under way for lockers to be installed between the cage and the Briggs Field House.

The eastern half of the cage is enclosed with rope and twine netting, providing suitable indoor space for soccer, lacrosse, baseball, softball, badminton, volley ball, golf practice, and similar sports. As shown on the floor plan (page 30), a standard size (infield) baseball diamond with a portable wire net batting cage may be set up in the northeast corner of the cage, while a 12 by 20 foot wire net cage for golf-driving practice is located in another corner of the east half of the cage. The golf cage is portable and, being supported from the ceiling by lines and pulleys, can be lifted up, out of the way when not in use. Portable nets, which may be quickly put into place, or removed when not needed, are also provided for intramural and student competition in badminton and volley ball.

The southern half of the cage contains a one-twelfth mile indoor cinder track, a combination pole-vaulting and broad-jumping pit of regulation width (but longer than standard pits), a standard high-jump pit, and a shot put circle.

In the athletic field adjacent to the Rockwell Cage and Briggs Field House, additional areas are being loamed and seeded. Approximately 300,000 square feet of playable areas are being added to recreational space on Briggs Field by leveling, loaming, and seeding the area at the new entrance to Briggs Field on Massachusetts Avenue, as well as the areas adjacent to the new tennis courts and along the driveway at the rear of the new Senior House. These new athletic improvements are particularly convenient for residents of Westgate, Westgate West, and the new Senior House — all of which border on Briggs Field.

Throughout its construction, flexibility of use for

Interior view of the Rockwell Athletic Cage showing beam construction. This photograph, looking toward the main buildings of the Institute, was made prior to the installation of the twine and wire netting which encloses this half of the cage.

M.I.T. Photo

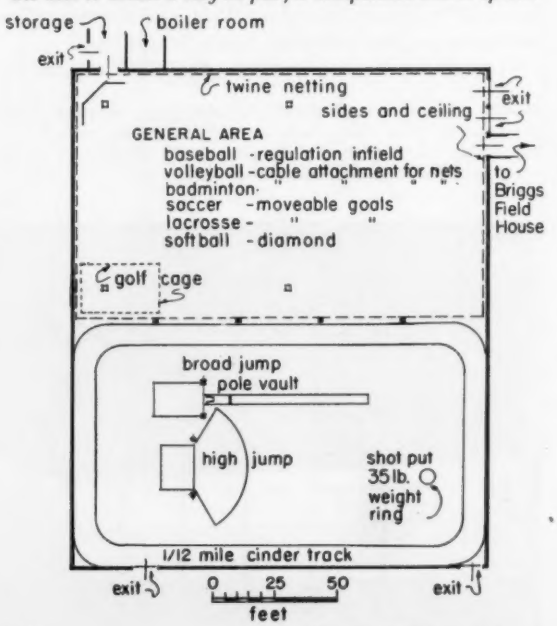
student athletics has been the keynote in constructing the Rockwell Athletic Cage. There are no bleachers or grandstand seats in this unit, since M. I. T.'s athletic program has always emphasized the development of physical fitness of the individual rather than grandstand specularity or the development of individual athletic stars. Although the cage is primarily a much needed addition to the Institute's athletic facilities, its flexible construction makes it well suited to other uses, on occasions. The Rockwell Cage will serve for student rallies, and will be put to good use for Field Day activities in the event of inclement weather. It is also available for future luncheons on Alumni Day, should the wet weather of the last two years usher in a new precedent.

Looking Ahead

The units which have been described will bring the reader up to date on recent construction, including buildings which are within a few months of completion. But there are other buildings under construction and still others projected, about which Review readers will wish to be informed. The Review will bring a running account as these are planned, completed, and dedicated. At the same time, a preview of things to come may not be amiss.

Foremost of the units to be completed in the reasonably near future is the Charles Hayden Memorial Library, described by Dean Burchard in the November, 1946, issue of The Review. This magnificent library is now under construction between Walker Memorial and Building 2 of the main academic group; it will connect these two units. Caisson foundations have been completed, and, at the time of writing, the concrete for the bottom floor is rapidly being laid. The new Hayden Memorial Library will serve as the academic and recreational library for the Institute's student body, Faculty, and staff. In addition, it will contain administrative offices for the Division of Humanities, and will also contain music and sound-film rooms as adjuncts to modern education. It is expected that this unit will be ready for use in another two years.

Floor plan of the Rockwell Athletic Cage, indicating the possible uses to which it may be put for competitive indoor sports.



M.I.T. Illustration Service

As announced on page 41, a new electrostatic generator is now under construction. Many of the parts of the generator are under construction in the shops of the Laboratory for Nuclear Science and Engineering, and the building to enclose it is expected to be ready by next spring. The building which will house the generator was designed by Professors Lawrence B. Anderson, '30, and Herbert L. Beckwith, '26, both members of the Faculty of the Institute's School of Architecture, and is an example of collaboration between the Laboratory for Nuclear Science and Engineering and the architects, as well as various departments and special consulting groups at the Institute, including the soil mechanics division of the Department of Civil and Sanitary Engineering, the Institute's Lighting Committee, and many others. The Sawyer Construction Company will build the new structure for M.I.T.

The generator proper will be contained in a steel tank slightly more than 12 feet in diameter and approximately 32 feet high, the total weight of which will be 93 tons. The weight of the insulating gas within the tank is 10 tons. The machine will be shielded by a cylindrical concrete silo two feet thick and separated from the generator by an air space of three feet. Beneath the generator will be a laboratory 40 by 50 feet with walls two feet thick to provide ample shielding against stray radiation.

The upper section of the building is in the form of a tower connected to a bridge which will give access to the interior of the generator and will be equipped with a crane capable of removing the 17-ton cover and parts of the machine. Access to the bridge is by elevator and stairs in the tower. A machine room will house accessory equipment, compressor motor, generator and batteries. Other facilities will include a control room, darkroom, and office. The building is principally heated by forced warm air with a fan room in the tower. By use of special controls it will be possible to divert the full ventilating capacity of the building into the laboratory for a complete change of air in approximately three minutes. A special lighting system, by means of a luminous ceiling and some indirect fluorescent units, has been designed for the new building. The structure will be built of reinforced concrete for the laboratory room and silo. The tower and bridge sections will be steel-framed and covered with corrugated asbestos, while the shop- and office-wing walls are to be built of masonry faced with the light-colored brick used in other Institute buildings.

On Memorial Drive at Amesbury Street, at the west end of Institute property, a building for the new supersonic wind tunnel has been erected. The offices, classrooms, and general facilities have been completed, but the wind tunnel is still to be built.

Projected also is a towing tank and hydrodynamics laboratory to be located on Vassar Street at Main

(*Concluded on page 76*)

Technical Publishing Today

Unprecedented Demand for Literature on American Technology Can Be Fulfilled Only by Exploring Every Advance which Reduces Cost of Book Manufacture

By **JAMES S. THOMPSON**

SPEAKING of his experiments with electricity, Benjamin Franklin once said: "Before long, Sir, we shall run printing presses with this fluid, and light our houses, and talk around the world. . . ." The factual establishment of these once fanciful seeming predictions occurred long ago. But technology has entered the stage of ever increasing refinements, and continually holds forth the promise of new predictions equally fanciful. Recently in the Huebner Laboratory in New York a group of men assembled to watch an electrically operated printing machine of a new sort. Properly speaking, it was not a press, for with its use the age-old method of printing by pressure was eliminated. Ink was transferred from type face to paper not by direct contact between paper and inked roller but by electricity – by the electrostatic forces which Franklin studied two centuries ago.

The publisher of technical books watches the work of the chemists as they strive to make better paper more cheaply and as they experiment to perfect the colors of those war-born inks that dry instantly upon contact with paper and yet do not dry and cake on the rolls. Throughout the long strike of newspaper printers in Chicago, publishers of books also carefully observed the results of the extensive use of the Varitype, a machine designed to compose and justify copy quickly, easily, and inexpensively, and closer akin to the simple typewriter than to the intricate Linotype and Monotype machines.

In the light of advancing costs and of ever increasing specialization along the technological front, the publisher of technical literature is reassaying his own techniques. All technological advances in printing, in paper and ink manufacturing, in bindings, in distribution, in methods of illustration, and the other mechanics of production of technical books are currently of especial interest to him.

Although, of course, he does not expect radical results at once, the book publisher waits with great hopefulness upon the findings that will emerge from the research programs having direct application to his field. One such program is now going forward at M.I.T. with the aid of a $100,000 grant made by the Carnegie Corporation to advance scientific aids to learning. That the Carnegie Corporation should establish so large a grant for the study was indeed recognition from a high place of the increasingly serious problem that faces all branches of the publishing industry and, in particular, the publisher of technical and scientific books.

The technical book publisher is faced with fixed traditions as to book prices on the part of his readers, while the high degree of technical specialization which characterizes modern science, research, and engineering calls for more volumes of limited edition. Both of these trends, plus the high prices that rising costs make necessary, may make it impractical for him to publish volumes that are of unquestionable worth but that are, perhaps, addressed to the leaders in some area of knowledge and so have no prospect of a large sale.

Engineers and Artillerymen

The technical book publisher has, of course, heard the currently fashionable argument that the postwar dollar is only a midget when compared to the prewar dollar. The inflationary trend he must accept for what it is, and often he is forced to ask for two dollars where formerly he asked for one. But his experience causes him to question whether this is an argument that is fundamentally sound over long periods of time. He believes that it is not appropriate for management to accept so marked an economic change in a spirit of casual complacency. When costs double, it is the role of management to explore every technological device that may cut them down. Taking aim at costs, and recalling that it was Napoleon's judgment that "engineers are more clever than artillerymen," that section of the publishing industry devoted to technical and scientific reading is peculiarly conscious of its good fortune that members of the M.I.T. Faculty are at work on the same range.

My contact with the Institute and its staff is based upon a series of annual visits to M.I.T. that have extended over decades. With my friend and fellow publisher, Edward P. Hamilton, President of John Wiley and Sons, Inc., I have engaged in friendly competition for a long generation as we sought in Cambridge the manuscripts that have become tools of education and of practice throughout the world.

Yet before us were the elders, I wonder how many general publishers could match the magnificent record of service that has been established by *Railroad Curves and Earthwork* – a text by the late Professor C. Frank Allen, '72. First copyrighted in 1889 that text sold in greater quantities in the year 1947 than in any previous year of its long life. In the course of an exchange of letters regarding contract provisions affecting the future of his book, Professor Allen (who had then just passed his 96th birthday) exhibited the same vigorous, precise capacity for detail that I remembered as so characteristic of him when we met during my first visit to M.I.T. in 1910.

Another work that seems destined for an infinity of use is the *Textbook of Ore Dressing* by the late Robert H. Richards, '68, sponsored by the late Professor

Charles E. Locke, '96. This also was recently the subject of active correspondence. Revised by Professor Locke in 1940, it continues to be the standard text in many mining colleges, and it is consulted as an authoritative work of reference in many countries.

Hazards of Specialized Volumes

But these elders did their work for a relatively large group of technical readers. By means of mass-production methods it is possible to print and distribute, economically, books for which the demand is large. Increased costs of production are modifying the economics of technical publishing to a certain degree. At the same time the publisher is keenly aware of his responsibility to cater to the needs of smaller and more highly specialized groups in advancing technological progress. Formerly, it was feasible, for example, to publish a book, priced at one cent per page, so long as at least 2,000 or 3,000 copies could be sold over a period of a few years. It was also possible to reprint such books in a quantity of only 250 copies. Today, even though we may set the price at a higher level, 750 copies should be the minimum reprint order to be economically feasible. The economic problem is particularly severe in the case of the highly specialized book or research monograph whose intrinsic value may bear no relation to cost of publication. Such volumes are the most eligible victims of increased costs. That this condition may abort some valuable books is, of course, a source of worry for the technical publisher. Yet, like all entrepreneurs, he is ready to gamble when he must, and although he may curse costs, it is his private resolution that if a manuscript is of sufficient worth he will publish it for however specialized an audience. Although this resolution grows out of a conscientious appreciation of his function, it is backed by a recognition that in all likelihood the pressure of events in science and technology will not permit a reduction in the output of technical books. In fact, just the reverse is true.

Last year I spent four months in Europe and in Latin America investigating international technical publishing activities. The trip provided an excellent and unusual privilege to examine the great demand that exists for technical publications produced in the United States, and to observe, at first hand, the need on the part of American publishers to employ each and every possible technological advance in enabling foreign scientists and engineers to build up, or rebuild, the natural resources and industries of their native lands, many of which have suffered the ravages of war. The demand for books which make available to our foreign friends the scientific and technical knowledge gained in this country during World War II is extreme and pressing. In each of the 11 United States Information Libraries in Europe, representing outposts of our culture, which I visited, there was an impressive demand for technical books and magazines from the U. S. The need is equally great in Latin America.

American Science in Demand

Our records show that we are exporting more technical books than ever before and there is an increased demand for the foreign language rights of American books. Last year one publishing house exported approximately seven times as many volumes as it had exported in the normal prewar year. In recent years the foreign language rights of about 350 United States technical books have been sold, the right to translate in Spanish being the best seller.

That there is a great interest throughout the world for the methods and results of American science and engineering supports us as we make our decisions on what to print. At the same time the experience of our technical book-publishing colleagues in the Argentine holds a note of warning that the concept of the midget dollar has its shortcomings. In December, 1947, production and operating costs had gone so high, and markets had shrunk so much, as a consequence, that some technical publishers had been forced to curtail

A group of technical volumes, of different publishers, representing book series, private experience records, and co-operative efforts of groups of technical personnel. Many of these volumes were written or edited by M.I.T. Alumni and Faculty.

M.I.T. Photo

programs. Except for the reprint of sure-fire commercial successes, technical publishing in general had been appreciably diminished.

At the present time Argentina is engaged in a five-year plan of national industrialization, and engineers from the United States have assisted in the development of this program. In discussions with Argentine Government officials, who are concerned with the organization of a large number of industrial schools, and also with capitalizing a large appropriation for the production of technical books in Spanish, a plan emerged by which technical book publishers in the United States would collaborate with Argentine publishers in making available Spanish editions of books published in this country. At the present time a professional committee in New York, organized by a group of technical publishers, is awaiting the complete agenda in order to prepare appropriate bibliographies. Aided by the government guarantees, the Argentine publishers should be able to produce Spanish editions of a large list of United States technical books.

Our ambassador to Argentina, James Bruce, has written as follows regarding this plan:

> Your representative in Buenos Aires has discussed with me your project for having certain American books translated into Spanish for use in the Argentine. I think this project is one of the most useful things we can do and that it will make a real contribution to better understanding between the people of Argentina and the people of the United States.
>
> As you know, German immigration into Argentina resulted in a large German population here and as a result of intermarriage there are many Argentines of German descent. During a long period of years and during the recent world war German influence among the armed forces and also in the Government was very strong. The defeat of the Axis powers brought disillusionment concerning German power and a natural decline of German prestige here. We are convinced that, on the whole, the armed forces of Argentina are now friendly toward the United States and that our influence is steadily on the increase. I know of nothing which would make a more lasting contribution to this trend than the use of translations of technical books by people in the army and in the Government. It is true that Nazi influence here was strong at one time and there no doubt remain some vestiges of this influence. However, the trend is definitely away from it. . . . I am convinced that we are now on the right track and the majority of the people in the Government feel that co-operation with the United States is desirable and in fact is indispensable for the future development of Argentina.

Let us hope that economic conditions in the United States will never make necessary Federal subsidies for the publication of required text and reference books. But such a hope can be realized only when every avenue of technological progress is employed economically. When, in Franklin's day, members of a college faculty wanted to put into print their theories of comets and the transit of Venus, they had their text and diagrams published in a newspaper. From this elementary beginning our industry has made its own way, and it has come far.

Origin of American Publishing

Of course our early ties in publishing are with the British, and the story of Nathaniel Bowditch well illustrates how American publishing had its early roots in foreign lands. Living most modestly hereabouts, in the Colonial period, becoming an authority in mathematics and navigation, he found grave errors in the classic English book on navigation which had been the Bible of the world's seafarers since 1770. Bowditch's revision in 1801 revolutionized practice, and today after 147 years, now published by the United States Hydrographic Office, it continues in use throughout the world, an example of precise workmanship and utility in literature.

During the late Eighteenth and early Nineteenth Centuries, there was a steady flow of descriptive pamphlets on equipment, and booklets on such subjects as canal, bridge, and highway location. Typical was the booklet on the Pennsylvania fireplace, by the great philosopher, kite-flying discoverer of electricity, one-time ambassador to France – Benjamin Franklin.

The industrial revolution in 1820 and war influenced the beginnings of technical publishing in the United States as they do the expansion today. Although the publication of technical books in the United States dates as far back as 1807, it was not until the Civil War period that the real momentum developed in the publication of technical volumes in the United States.

Three Major Contributions

At the present time three important operations in technical publishing are exceedingly effective in bringing to the scientist and engineer the valuable results of his technical colleagues. I refer, first, of course, to the development of book series, private experience records, and the co-operative efforts of groups of technical personnel.

As among European publishers – the Cambridge Press, for example – nearly all technical publishers in the United States have distinctive series of books in their respective programs, nearly all of which have been developed since World War I. In many cases, Alumni, as well as members of the Faculty of M.I.T., have contributed to this worthwhile program. For example, the M.I.T. Electrical Engineering Series, produced jointly by John Wiley and Sons, Inc. and the Technology Press; the Bell Telephone Laboratory Series in communications by D. Van Nostrand Company, Inc.; the American Chemical Society monograph series by Reinhold Publishing Corporation are excellent examples of a group of co-ordinated books on a single broad topic. Three important McGraw-Hill Book Company, Inc. series have close connections with M.I.T. personnel: The International Series in Physics was projected first from a consultation with President Compton when he was teaching physics at Princeton. The Radio Communication Series, under the consulting editorship of B. Dudley, '35, editor of The Review, was started when he was managing editor of *Electronics*. The new Series in Aeronautical Sciences has, as editor in chief, Jerome C. Hunsaker, '12, internationally famous head of the M.I.T. Department of Aeronautical Engineering.

Unique in technical publishing development here, in the second place, has been the success in persuad-

(*Concluded on page 72*)

A NEW EXPERIMENT IN International Relations

Sixty-two European Students in Science and Engineering Spend the Summer Studying at the Institute and Becoming Acquainted with American Ways

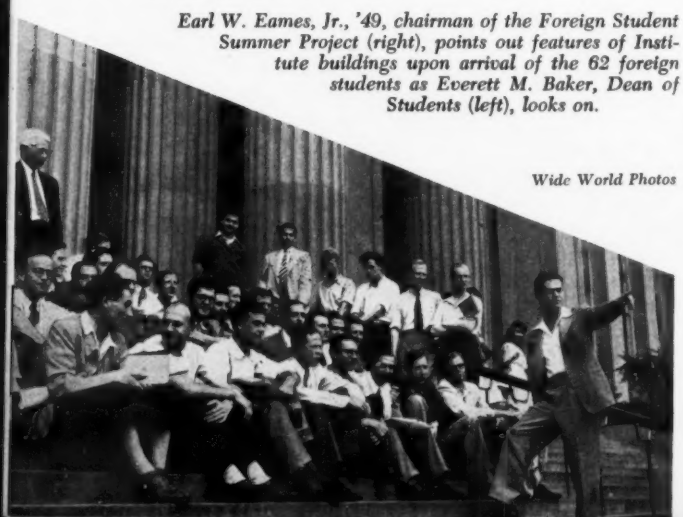
By **DONALD J. EBERLY**

OF the student body now studying at M.I.T., many have seen, and perhaps participated in, the destruction in Europe during World War II. The devastating impressions thus gained are lasting ones, not easily blotted out from one's mind. They are dark spots in our memories which might best be forgotten. And yet, sometimes such impressions also serve to awaken new concepts, to create an awareness of obligations to others, or to act as a spur toward the better, freer life for which the war itself was fought.

It came as a natural idea, therefore, that students should be able to play their part in the educational reconstruction and rehabilitation of Europe. A year ago this topic was one of current interest among students at M.I.T. and was formally discussed by members of the National Student Association* Committee at M.I.T. in May, 1947. As a result of these discussions, it was decided that there would be merit in inviting a number of European students of science and engineering to study at M.I.T. during the summer of 1948.

The original idea, which has been closely followed, was to make available to a selected group of foreign students a summer session of study at M.I.T. in the field of the student's own choice, to give our guests an opportunity to study living conditions, points of view, and the economic, social, and political life of people in the United States; to give them an opportunity to meet other European students in science and engineering; and, above all, to make such a program available without cost to our guests. There were to be as few restrictions as possible attached to the selection of participating students, but it was evident that facility in the English language and a certain degree of maturity would be necessary. Otherwise, so far as possible, students were to be selected, roughly, in accordance with the degree of devastation which their native lands had suffered during World War II. To a very large extent the program was initiated and sponsored by Earl W. Eames, Jr., '49, at the time a junior student taking courses in chemical engineering as well as in business administration and who has served, from the beginning as chairman of the project.

* The National Student Association Committee is a student managed organization dedicated to the welfare of college students. More than 200 colleges and universities throughout the country, and representing approximately 750,000 students, are members of the N.S.A.



Earl W. Eames, Jr., '49, chairman of the Foreign Student Summer Project (right), points out features of Institute buildings upon arrival of the 62 foreign students as Everett M. Baker, Dean of Students (left), looks on.

Wide World Photos

Obviously, such a program was far beyond the capabilities of a group of Technology students working alone; even from the first, it was evident that much assistance would be required for the successful execution of this objective. After giving careful consideration to the plan, we presented our idea to the Constitutional Convention of the National Student Association, during the summer vacation period, and obtained unanimous support. When we returned to school in September, 1947, we went to President Compton and presented our plan to him, asking for his help in bringing a maximum of 80 students to M.I.T. for the summer. He was immediately enthusiastic and offered his complete co-operation; at the same time telling us that since this was a student project, he felt it should be organized and run by students. The Foreign Student Summer Project, as our plan was called, has always remained a student project, although the utmost co-operation and assistance from Administration and Faculty were promptly forthcoming whenever such help was requested. Dr. Compton told us he would place our plan before the Executive Committee of the Corporation with the request that it waive the tuition payment for 80 students as listeners, rather than as regularly enrolled students at M.I.T. This request was soon granted and, by greatly reducing expenses, was an important factor in making the project possible.

We next approached the fraternities to see if they would house the foreign students. All of the fraternities remaining open during the summer agreed to accommodate foreign students rent free; and another hurdle, that of housing, was successfully passed.

By November 1, a committee of 20 began consideration of the real problems involved in the project — and they were many. Funds had to be raised for the transportation, feeding, and incidental expenses of

our visitors, and there would be unavoidable expenses in administering such a program. Plans for publicizing the project would need to be worked out. Arrangements would have to be made for visas and other legal documents, and the general health and well-being of our guests would also require attention. We found out later that a host of other problems would arise as well.

The first problem to be settled was the criteria to be used in selecting students who would participate in the program, making sure that there would be no serious limitations because of language differences. It was decided to invite 80 graduate students in science and engineering from all war-devastated European countries, whether former enemy or ally, and without regard to students' politics, religion, or race. The students would have to possess good knowledge of English, and would be chosen on the basis of academic record, extracurricular activities, and ability to benefit from graduate study or participate in research at M.I.T. An upper age limit of 35 years was also established, to assure that participants would profit from their summer study for many years to come.

The original screening of applicants posed a problem which we discussed with personnel of the State Department's Division of International Exchange of Persons. The cultural attachés, through the State Department, were able to offer some assistance, and additional aid was obtained through National Committees of the International Student Service† working through the World Student Service Fund. These groups agreed to screen all applications to eliminate those who would not best be able to benefit from our program, passing on to us, for final selection, the applications of the most worthy.

The selection of the students overseas was a large problem which was solved to our satisfaction. Through the co-operation of the International Student Service and the Division of the International Exchange of Persons of the United States Department of State, screening committees were set up in most of the countries concerned, to distribute information and applications, to interview and screen all of the applicants, and to send the completed applications, together with recommendations to our final selection committee at M.I.T. An excellent selection procedure was carried out in this way. The work of preliminary screening is very much appreciated, since originally there were more than 7,000 applicants. Our final selection was made from 500 applicants, from which 62 students were chosen to come to M.I.T. Final selection was made by members of the Foreign Student Summer Project Committee with the valuable advice and assistance of Paul M. Chalmers, adviser to foreign students at M.I.T., and other members of the Registrar's Office and the Administration.

About February 1, 1948, after considerable support of the project had developed in M.I.T. circles, two members of the committee visited Washington. The M.I.T. Foreign Student Summer Project was explained in detail to diplomatic representatives of Belgium, Bulgaria, Czechoslovakia, Denmark, Finland, France, Great Britain, Greece, Hungary, Italy, Luxembourg, the Netherlands, Norway, Poland, Rumania, Russia, and Yugoslavia. The Civil Affairs Division of the War Department was consulted regarding students from Germany and Austria.

While our selection procedure and our contact with the governments were going on, we were also busy on our fund raising. Our initial budget was set at $25,000; later it was revised upwards to $30,000. This amount covered food, books, equipment, insurance, haircuts, laundry, dry cleaning, and incidentals, plus certain transportation costs which the students' own governments did not assume, and transportation within the United States.

The project was announced to the press on March 1 and immediately received excellent support. The project was one which stirred peoples' imaginations,

† The International Student Service, with principal offices in Geneva, Switzerland, co-ordinates and aids in programs of relief, reconstruction, study and travel for students all over the world. The World Student Service Fund is the United States Committee of I.S.S.

Dr. James R. Killian, Jr., '26, conducts a discussion group and acquaints European summer students with M.I.T. objectives. Seated, rear right, are: George R. Harrison, Dean of Science; Nathaniel McL. Sage, '13, Director of the Division of Industrial Coöperation; and Everett M. Baker, Dean of Students.

Wide World Photos

not only because of the unusual opportunity afforded a select group of European students, to become acquainted with educational and other conditions in the United States, but also because the Foreign Student Summer Project was conceived and managed by M.I.T. students. From such publicity as was received, there came many offers to aid in our Foreign Student Summer Project.

Applications arrived from foreign countries as early as April. The 62 students selected to attend the project at M.I.T. this summer came from 15 countries as follows: six from Finland, two from Sweden, five from Norway, four from Denmark, four from Belgium, five from the Netherlands, four from Great Britain, eight from France, one from Germany, one from Austria, eight from Italy, one from Bulgaria, three from Czechoslovakia, six from Poland, and four from Greece. Although invitations were extended to students in Hungary, Luxembourg, Rumania, Russia, and Yugoslavia, there were no students representing these nations in the summer project.

As the time approached for students to arrive in this country, it became necessary to make suitable provisions for their reception. This was not always easy, because students arrived at various periods between June 2 and June 23, and came by various routes. However, it was realized that first impressions are always important, and therefore great pains were taken to organize and co-ordinate the students' activities upon their arrival. Members of the committee met the students and had living quarters arranged for them in New York, usually with the help of the consuls or their diplomatic officials. Organized group activities were planned – tours of New York, trips to the United Nations Headquarters, and so on – and the students remained in New York until a reception for them was given at the Waldorf-Astoria on June 16. There they met many of the ambassadors, ministers, and other officials, after which they immediately came to Cambridge to begin their courses of study.

Upon their arrival in Cambridge, the students were interviewed in a special registration procedure by Professor Chalmers, and the project chairman. The purpose of such interviews was to determine what studies the student might best profit from during his three months' stay at M.I.T. In some cases it was not possible to permit the student to follow studies of his choice, since a full academic program is not in operation at M.I.T. during the summer months. In other cases, it became evident that the student's unfamiliarity with the Institute and educational practices in the United States necessitated a revision of his original judgment of studies he wished to follow.

As might be expected, most of the students were shy and a bit strange, at first, but our committee made every effort to show hospitality and gradually our guests came to know one another as well as they knew us. During the summer we often heard it said that this project afforded the first opportunity many of them had had to know other European students in science and engineering.

Once the foreign students began their studies and were comfortably housed in Cambridge, the months of long and arduous planning and preparation began to yield rich dividends.

We cannot overemphasize the consideration we gave the living arrangements of the students. Our purpose in bringing them to the United States was not only to acquaint them with our technical activities, but to have them meet other students. We felt that a good way to accomplish this was to house them in fraternities. Each fraternity which housed more than four students always had one from northern, eastern, southern, and western Europe. At no time were there two or more students from the same country living in the same fraternity house. Whenever possible we tried, however, to fulfill the request of fraternities for specific students. The only young lady participating in the project was housed in the Women's Dormitory.

International Exchange

By intermixing the students, many Americans learned new facts about the European countries, while the Europeans gained firsthand information about the United States. During the Republican Convention, one of the fraternities invited all the students to watch the proceedings over its television set. One of the American students made a brief talk and answered many questions regarding the political system in the United States. From all comments it is clear that the living conditions and arrangements have been most pleasant for both foreign guests and American hosts.

An important aspect of the Foreign Student Summer Project was to acquaint foreign students with American customs and points of view, and to provide them with opportunities to become acquainted with the economic, political, and educational system of the United States. Toward this end there were organized a program of evening lectures, seminars, trips to various manufacturing plants, field trips, picnics, and weekend visits to homes of members of the M.I.T. Faculty and staff. In several cases our guests had invitations from persons having large estates who were anxious to proffer hospitality. For the most part, however, effort was made to enable the students to become acquainted with groups in the middle economic stratum.

Special meetings were arranged in which the students could exchange ideas with their professors about anything from the applications of weather-radar to international relations and the control of atomic energy. A special course in English, by reading and discussion, was also organized.

Twice a month, as part of the seminar series, an information program was held. At each meeting five leading authorities in various fields were invited to answer the students' questions on matters of history, current political thought, States' rights, the role of labor unions, and similar topics.

It appears that the program of hospitality and extracurricular activities which had been planned was such as to keep the foreign students going at a more active pace than is customarily followed by regular students at M.I.T. In fact, some of the students commented that their social and study program left them little time for sleep – and yet there was so much to pack into the 14 weeks during which they would be guests.

Nor were the health aspects of our foreign guests neglected any more than their academic needs. Realizing that we would have to assume liability for acci-

(*Continued on page 64*)

THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

Charles E. Locke: 1874–1948

PROFESSOR Charles E. Locke, '96, a member of the Institute's staff for 40 years before his retirement in 1941 with the rank of professor emeritus and honorary lecturer in the Department of Metallurgy, died on September 24 in the Homberg Infirmary after an illness which had its origin several years ago. He had served as secretary of the Technology Alumni Association since 1930, and his activities in this field brought him into contact with Technology graduates throughout the world.

A native of Milton, N.H., where he was born on August 29, 1874, Professor Locke later moved with his family to Portsmouth where he received his early education in preparation for entering M.I.T. A year after his graduation from the Institute in 1896, Professor Locke was engaged by the late Professor Robert H. Richards, '68, then head of the Department of Mining and Metallurgy, to assist in the preparation of a book on ore processing. This association led to a lifelong friendship during which Professor Richards and Professor Locke collaborated on many projects that had a wide influence on mining methods.

In 1901 Professor Locke was appointed a member of the Institute's instructing staff, and in addition to teaching, he traveled widely to keep in close touch with the progress of his former students and to add to his knowledge of developments in mining operations. He expanded the Institute's courses founded by Professor Richards and made important contributions to methods of processing ores. He was appointed assistant professor in 1906, associate professor in 1919, and was given the rank of full professor in 1930. From 1939 to 1940, Professor Locke was acting head of the Department of Mining and Metallurgy, which later became the Department of Metallurgy.

In connection with his professional career as an authority on ore dressing and mining engineering, Professor Locke was frequently called on for consultation and visited nearly every state in the United States, as well as Canada, Newfoundland, Mexico, Japan, and Korea. The hospitality shown him on these trips was an evidence of the regard in which he was held by a host of friends. Wherever mining engineers are found – from Alaska to the Andes and west to the African gold fields – Professor Locke was known as an admirable teacher and an outstanding engineer. Early in his career Professor Locke was of great assistance to Professor Richards in preparing the latter's four-volume treatise on ore dressing, and was responsible for a major portion of the work on the subsequent *Textbook of Ore Dressing* which came out under the authorship of Professor Richards and Locke.

In addition to his coauthorship with Professor Richards, of a textbook on ore dressing, Professor Locke contributed numerous technical papers on mining subjects in the technical journals of his field. For more than 35 years before his retirement he had written an annual comprehensive review of progress in ore dressing and coal preparation, and these annual reports were regarded as outstanding.

M.I.T. Photo

CHARLES E. LOCKE, '96

Secretary – M.I.T. Alumni Association, 1930–1948

Until about 1914 the Department of Mining and Metallurgy for many years held an optional traveling summer school with trips which extended to Pittsburgh, Duluth, or Nova Scotia with emphasis on mining or metallurgy, alternating from year to year. Professor Locke usually laid out the itinerary and arranged the details. During the trip he looked after the needs of the students and was an important factor in making the trip successful. At the end of the trip he had every student for a warm friend.

The outstanding characteristic of "Charlie" Locke, as he was affectionately known to M.I.T. Alumni, was undoubtedly his capacity for making friends by taking a real interest in the men with whom he came in contact. The special beneficiaries of this interest were the students in Mining and Metallurgy at M.I.T. He had

a personal file of Course III graduates which he tried to keep up to date. In this way he could tell visitors just what their classmates were doing. Over a long period of years Professor Locke made it a practice to write a letter to each Course III graduate after he had secured his first job, make helpful suggestions, bring him up to date on M.I.T. affairs, and ask him to write any time he needed help. A large number of men took advantage of this friendly gesture, and warm friendships developed from them. When Locke became secretary of the Alumni Association the same interest was spread over the whole alumni body. His letters were never short, perfunctory things but radiated a real desire on his own part and in behalf of the Alumni Association to be of direct help to all Technology men.

One of the outstanding monuments to Locke's capacity for management and detail is the present Alumni Council. Through a long succession of officers and committeemen the meetings of the Council have been well attended and a credit to the Association. Much of this success has been due to the work of Secretary Locke.

Of his associations with Technology Alumni, for which he is probably best known by most Alumni, he once modestly said:

> I became secretary of the Class of 1896 in 1908, and have continued as secretary down to the present time. I had not been particularly active in Alumni affairs, having merely served occasionally on some committees. My real activity began in 1930 when I was made Alumni Secretary. My work in this office has been primarily that of corresponding and recording secretary, because as I was working only part time I could not possibly spend time travelling to make personal visits to Alumni clubs. These visits have been limited to such groups as were within easy reaching distance of Boston, or to such groups as might be along my routes whenever I was making a professional trip. I have seen the Alumni Association grow in numbers and in activity. Changes have been gradual, but in looking back since 1930 one is surprised to find the progress that has been made in Alumni affairs and activities.

Professor Locke was a member of the American Institute of Mining and Metallurgical Engineers and a charter member of the Boston Section. He believed that all students in mining and metallurgy should join this organization as student members and continue as regular members. He took on himself the task of informing the student body regarding this professional society, and then approached each, individually, regarding joining. In this, as in everything he did, the work was not considered completed until the last detail was checked off and each student who had decided to join had filled out his application and forwarded it to headquarters. He also did all he could to stimulate and advise officers of the student professional society in their activities.

Professor Locke usually reached his office soon after 8:00 A.M., and until within a few years stayed until 5:00 P.M. or later. He usually took the month of August for a vacation but even then frequently reported at his desk several times. Because of these long hours, and disregard of normal academic vacation periods, visiting Alumni could usually find him in his office with a friendly greeting for them and willingness to chat on personal or general professional matters.

Bread Upon the Water

THAT the Institute Alumni are deeply loyal is so apparent as to be almost axiomatic. Occasionally, however, there arises an unsolicited example which demonstrates this loyalty so cogently that it merits special notice.

A former recipient of a Swope Fellowship, who prefers to remain anonymous, recently presented the Institute with a check for $1,900 for a one-year graduate fellowship in electrical engineering. The donor felt he could best express appreciation for the year of graduate study he himself had received through the generosity of another, by thus providing for a year's graduate study under the freedom of a fellowship.

One's faith in human nature cannot but receive a lift when a relatively recent alumnus, still practicing his profession as a professional worker and not an entrepreneur, thus concretely and generously recognizes the help he himself has received. Editorially we may perhaps be pardoned for recalling the Biblical quotation in Luke 10:37.

Student Insurance Plan

WITH the opening of the school year on September 27, a student accident and sickness insurance plan, which supplements the services of the Medical Department, will go into effect at M.I.T. as announced by Dr. Dana L. Farnsworth, Medical Director of the Institute. The new program, which is designed to meet conditions prevailing in a university, is voluntary and protects the students at minimum cost against the possibility of expensive illnesses or injuries.

"The value of such a health and accident protection plan," said Dr. Farnsworth, "is indicated by the rising cost of medical care. Under this insurance program, accidents or illnesses, as well as major surgical operations, are covered and the limit of reimbursement is sufficiently high to offer students adequate protection in all except the most unusual cases. There is no limit on the number of separate illnesses or injuries for which reimbursement will be made."

The policies, for which more than 2,000 students have already applied, provide protection from a week before registration day until a week after the last examination of the term, and cover hospitalization and the services of physicians or surgeons and treatment in any recognized hospital. The new program is open to all students who are candidates for a degree, at a charge of $8.00 per semester.

The plan covers hospital board and care at the Institute's Homberg Memorial Infirmary at the student rates or at a hospital at the rate of $10.00 per day, including $50.00 for specified services while a patient in a hospital. The policy also provides for charges for outpatient services. In case of need for surgical treatment, payments will be made at the rate of $200.00 for an appendectomy and any corresponding amounts for treatment of fractures, dislocations, and other injuries. The maximum amount payable for operations arising from a single disability is $300.00.

Medical attention will be provided under the new plan at the rate of $4.00 per visit up to 25 visits. Provisions are also made for the services of specialists,

The Department of Metallurgy has recently been the recipient of a portrait of Robert S. Williams, '02, Professor Emeritus and Lecturer in Physical Metallurgy. The suggestion that associates and former students of Professor Williams might like to honor him and the Institute by having his portrait painted came from Samuel C. Prescott, '94, Professor Emeritus of Industrial Biology, and was received with hearty enthusiasm.

The portrait was painted by H. Bingham Ballou who succeeded in capturing an exceedingly good likeness of Dean Williams. Mr. Ballou also painted a portrait of Dr. Prescott several years ago which was presented to the Institute.

At the presentation, Dr. and Mrs. Compton, Dr. James R. Killian, Jr., '26, Dean Prescott, Edward L. Moreland, '07, Executive Vice-president, and many close friends and their wives were present. Professor Victor O. Homerberg, '21, acted as master of ceremonies and called upon the late Charles E. Locke, '96, to make presentation on behalf of graduates of the Department of Metallurgy. Along with his comments at the unveiling, Professor Locke read a number of letters that had been received from various Institute Alumni in appreciation of the effective teaching and personal friendliness which they had enjoyed from Dr. Williams in student days.

Professor John Chipman accepted the portrait for the Department of Metallurgy and commented on the valuable contributions which Dean Williams had made in building up the Department. He then asked Dean Williams to step forward so that the visitors might have an opportunity to compare the portrait with the subject. The exercises were concluded by a tea arranged by secretaries of the Department.

M.I.T. Photo

in cases requiring consultation, and for dental services necessitated by accidents. The policy also provides for ambulance services. The total reimbursement for all sickness and accident services are covered to a total amount of $500.00 for any illness or injury.

Class of 9-48

An informal ceremony for the presentation of degrees to the graduating class of September, 1948 (the last class to study under the accelerated program in effect during the war), was held in Walker Memorial on the afternoon of Friday, September 24, with Professor Ralph G. Hudson, '07, chairman of the Committee on Commencement. The invocation was delivered by Everett M. Baker, Dean of Students, and Karl T. Compton, President, addressed the candidates.

In his address, entitled "Maxwell's Demon," President Compton suggested that two immutable physical laws of nature – the principle of the conservation of energy and the second law of thermodynamics – had a corresponding counterpart in daily life. The social analogue was expressed by President Compton in the words: "Thou shalt not try to get something for nothing but thou shalt earn what thou desirest."

Assisted by John W. M. Bunker, Dean of the Graduate School, Dr. Compton presented degrees to more than 500 candidates. The ceremony was attended by members of the Corporation and Faculty, and the families and friends of the candidates.

Faculty Appointments

Appointment of five new members to the Faculty at M.I.T. was announced during the summer by Dr. James R. Killian, Jr., '26.

The five appointees are Charles P. Kindleberger, II, Alexandria, Va., to be associate professor in economics; James N. Addoms, Dorchester, to be assistant professor in chemical engineering; Morris A. Adelman, Washington, D.C., to be assistant professor in economics; Alan S. Michaels, 2–46, Brookline, to be assistant professor in chemical engineering; and Lockhart B. Rogers, Oak Ridge, Tenn., to be assistant professor in chemistry.

Dr. Kindleberger, a native of New York, was born in 1910, and holds the degree of doctor of philosophy from Columbia University, awarded in 1937. He comes to M.I.T. from a post in the Department of State, Washington. He has previously served as economist with the Office of Strategic Services in Washington and London, the Board of Governors of the Federal Reserve System, the Bank for International Settlements in Basle, Switzerland, and the Federal Reserve Bank of New York. He is the author of a book on short-term international capital movements, as well as numerous articles, pamphlets, and book reviews.

James N. Addoms, a research associate in the Division of Industrial Coöperation at M.I.T. since 1946, received the bachelor of science degree from Haverford College, Pa., in 1942. Before coming to M.I.T. he was associated with the Explosives Research Laboratory of the National Defense Research Committee, Bruceton, Pa., and the Monsanto Chemical Company, Dayton, Ohio. He is a junior member of the American Institute of Chemical Engineers, a member of the American Chemical Society, and treasurer of the M.I.T. chapter of Alpha Chi Sigma, professional chemical fraternity.

Morris A. Adelman received the degree of master of arts from Harvard University in February, 1948. He was a member of the War Planning Board in 1941–1942 and more recently has served on the Board of Governors of the Federal Reserve Board. At M.I.T.,

M.I.T. Photo

Ralph L. Evans, Jr., '48, represented the United States in dinghy sailing at the 1948 Olympics last August at races held at Torquay, Devonshire, England. Up to the time of going into the seventh race, Evans was in the lead. In the final race, in close competition with representatives from 21 nations, broken gear forced Evans to drop behind to finish second in the final totals; the first place, by a few points, went to Denmark's representative. The record established by Evans is the best made in dinghy events by United States representatives in Olympic sailing, and reflects creditably on collegiate sailing in this country, especially since the type of craft used in the Olympics is almost unknown in this country. At the left are the two sides of medals given to Olympic participants. Both sides of the silver medal, which was awarded to Evans for placing second in the races, are shown at the right.

Professor Adelman will be associated with the recently announced fellowship program sponsored by the Alfred P. Sloan Foundation.

Alan S. Michaels, 2–46, received the doctor of science degree from M.I.T. in June, 1948. While studying at the Institute he served the Department of Chemical Engineering as an assistant and a research fellow, and he was elected to Tau Beta Pi and Sigma Xi. He was with the Carter Oil Company, Tulsa, Okla. prior to returning to the Institute.

Lockhart B. Rogers holds the degree of doctor of philosophy from Princeton University. He was an assistant professor in the chemistry department at Stanford University, Calif., in 1943, and since 1943 has been a member of the staff of the technical laboratories of the Atomic Energy Commission at Oak Ridge, Tenn.

Richards Centennial

On July 17, Henry Richards, '71, oldest living Alumnus of the Institute celebrated his 100th birthday anniversary at the home of his daughter, Miss Rosalind Richards, in Gardiner, Maine. At a birthday party in his honor, Mr. Richards enjoyed numerous messages of good will which were sent for the occasion.

A letter from his son, Henry H. Richards, addressed to the late Charles E. Locke, '96, as Secretary of the M.I.T. Alumni Association, recalls the unusual occasion in the following simple but impressive words:

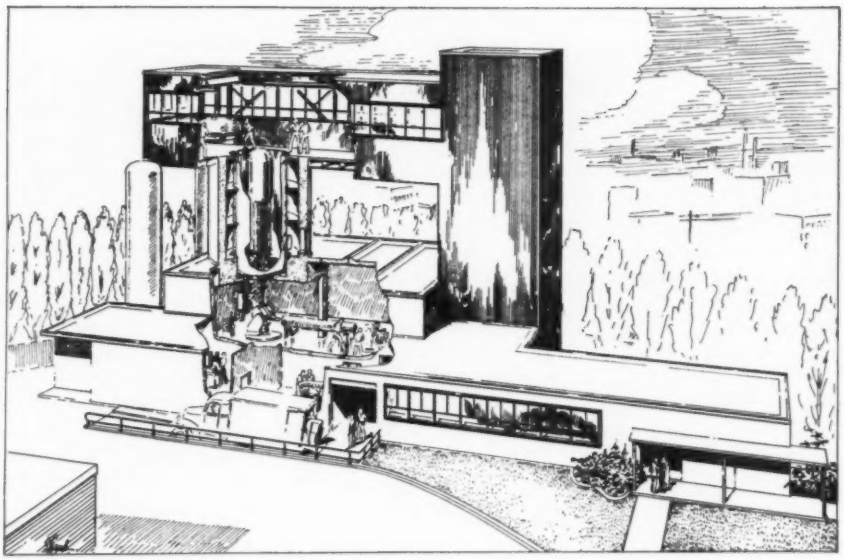
> He is, as you doubtless realize, quite blind and pretty feeble in every way, but he was able to take in the messages from you and President Compton and was very glad to get them. He realized fully that he had crossed the century line, and took much quiet satisfaction in the fact, as well as in the many messages, flowers, etc., and in his 100-candle-power cake. He was even able to see the light of the candles. One notable feature of the day was the fact that he had and enjoyed a bit of lobster for lunch! He was much pleased to hear about the exhibition of some 40 of his watercolor sketches which was staged in the Gardiner Public Library as part of the birthday celebration. It is a very good show. The dates of the pictures have a range of 60 years, and the subjects, though mostly in Maine, are in some cases as far afield as Bermuda, Athens, Antwerp, and so on.

Class-Anniversary Volumes

The appearance this year of at least two volumes dealing with class activities gives rise to a hope that this desirable practice will be emulated in the future. In the past, commemorative volumes on class activities have appeared from time to time, particularly in connection with the 25th or 50th anniversaries. But, so far as can be ascertained, this is not a regular practice; rather does it usually reflect the energetic initiative of a few individuals who willingly devote a great deal of their time and energy to the joy of their classmates.

During the summer a *Golden Anniversary* brochure of the Class of 1898 has appeared, as did also a cloth-bound volume of the history of the Class of 1917. The former, prepared for the 50th Class Reunion last June, under the direction of Lester D. Gardner, '98, is primarily a directory and necrology of the Class of 1898, but serves as a reminder that this class also issued anniversary numbers in 1901, 1914, 1923, and 1928.

The volume of the Class of 1917, which has been made possible through the efforts of Thomas K. Meloy, '17, is a handsomely made volume of 271 pages bound in blue cloth with gold lettering. This *Thirtieth Anniversary Report* lists the class officers, gives the class history, provides vital statistics of its members, and includes a biographical sketch of each individual in the Class who responded to Mr. Meloy's quest for



Cutaway sketch of the structure, now under construction, which will house a new Van de Graaff-type 12,000,000-volt electrostatic generator. The new generator will be used for studying the biological effects of high-energy radiation on matter, and for nuclear research.

Many parts of the generator are under construction in the shops of the Laboratory for Nuclear Science and Engineering. The building to enclose it, described on page 30, is expected to be ready by next spring.

data. The chronicles of 1917's reunions since graduation are supported with a generous supply of photographs reproduced on calendered stock. It is a reference volume which class members will find useful throughout the years and one which can well be used as a guide by other classes desiring to publish their own memorial volumes. While credit for this outstanding work must go, largely, to Mr. Meloy, chairman of the Class Records Committee, many others of the Class of 1917 also made major contributions as acknowledged in the foreword.

Three Coaches for M.I.T. Athletics

APPOINTMENT of three full-time staff members in athletics and physical education at M.I.T. has been announced during the summer by Ivan J. Geiger, Director of Athletics.

The three are Arne Arnesen, formerly assistant coach in track at Springfield College, Springfield, Mass.; Warren Berg, formerly head freshman coach of baseball and basketball at Harvard University; and Benjamin R. Martin, formerly head coach of lacrosse at M.I.T. on a part-time basis. All three become instructors in physical education on the M.I.T. staff.

Now completing his requirements for a master's degree in physical education at Springfield College, Arne Arnesen is a graduate of the University of Wisconsin where he competed in varsity and freshman track. At M.I.T., Arnesen will coach field events in track and assist in coaching cross country. He is specializing in analysis of the mechanics of field events by high-speed photography, and it is expected that he will continue this work at M.I.T., in conjunction with Harold E. Edgerton '27, Professor of Electrical Measurements.

A Harvard pitching ace during undergraduate days, Warren Berg has since played with the Lynn Red Sox and other local teams. For the past two summers he has served as director of the Y.M.C.A. Caddy Camp at Osterville, Mass. Beginning this fall, he will be head baseball coach and serve as assistant basketball coach at M.I.T.

Benjamin R. Martin was an All-American lacrosse player at Syracuse University, from which he was graduated. He has been head coach of lacrosse at Harvard University. Since 1945 he has held the same position on a part-time basis at M.I.T.; during that time his teams have compiled an enviable record of wins. Beginning this fall, he will serve as head coach in both lacrosse and hockey at M.I.T.

Generator for Nuclear Studies

CONSTRUCTION of a 12,000,000-volt electrostatic generator, which will make it possible to bombard atomic nuclei at a voltage several times higher than that produced by any existing machine of similar type, has been started at the Institute. Announcement of the Institute's new high-voltage project was made recently by George R. Harrison, Dean of Science.

The new generator will be of great value in nuclear research for it generates high voltages at direct current which will permit precise experiments in the disintegration of nuclei. The energy developed in the steady streams of positive ions accelerated by this device will be sufficient to explore the structure of even the heaviest of the atomic nuclei. A unique feature of the generator is that the energy can readily be varied from zero to maximum voltage to cover a wide range of experimental requirements.

An outgrowth of the original generator designed by Robert J. Van de Graaff, Associate Professor of Physics at M.I.T., the new machine has been improved largely through the researches of John G. Trump, '33, Associate Professor, and his associates in the Department of Electrical Engineering, who have been active in the development of new techniques for insulating high-voltage apparatus through the use of gas under high pressure. The original big Van de Graaff generator, built in 1933, produced potentials of 2,000,000 volts and with modifications of design was used to great effect during World War II for radiographic examination of heavy castings. It is still in operation for precise studies of nuclear structure. Successive ad-

vances in design have made it possible to build equivalent accelerators which are only six feet high and operate at the voltage of the original machine. The generator now under construction, although slightly smaller than the original machine, will operate at a voltage six times greater.

The high voltage of the Van de Graaff electrostatic generator is achieved by spraying electrical charges on endless insulating belts which carry the charges up and store them on a dome-shaped terminal, which serves as an electrical reservoir on which the voltage is quickly built up. From this terminal the accumulated energy is drawn through a vertical accelerating tube, resulting in a stream of high-velocity particles which are focused on a target of the atomic nuclei whose structure is to be investigated. Such streams of well-directed nuclear particles, all accurately similar in energy and controllable over a wide energy range are now regarded by physicists as the most precise means of investigating the intricate structure of the atomic nucleus.

In addition to its use for nuclear research, the new generator will be used for studying the biological effects of high-energy radiation on living and nonliving matter. Such studies may include the inactivating effects on bacteria, virus, and enzymes, as well as the possibilities of utilizing such radiations for the treatment of malignancies.

Tracer Research

MODERN radioactive tracer techniques provide engineers with an analytical tool hundreds of times more sensitive than the older chemical methods and it is expected that their use will lead to more efficient production of metals from raw ores.

Studies by this method are made by following the electron emissions from radioactive atoms which are introduced into any substances to be studied. For example, it is possible to tag copper sulphate with radioactive copper with the copper sulphate added to the mineral, sphalerite, in water. By means of a Geiger counter, it would be a simple matter to determine the amount of copper extracted from the solution. Many metallurgical problems of a similar nature but less simple will be studied by this method.

Significant, therefore, is an announcement by Thomas K. Sherwood, '24, Dean of Engineering, that research on the application of radioactive tracer techniques to mineral engineering problems will be expanded in the Department of Metallurgy at M.I.T. under a grant from the research division of the United States Atomic Energy Commission.

The new program will make it possible to carry on fundamental research which is expected to be of special value to the mineral industry, and also to train engineers in the use of radioactive tracers in this important industrial field. The research program will require the services of men trained in the field of mineral engineering, and chemical engineering, as well as scientists from the related fields of physics and geology.

The project, which will be started at once, will be under the direction of an advisory board composed of Bruce S. Old, '38, of Arthur D. Little, Inc., and the Atomic Energy Commission; Professor Antoine M. Gaudin and Reinhardt Schuhmann, Jr., '38, Associate Professor of Process Metallurgy; John Dasher of the Division of Industrial Coöperation; Professor Robley D. Evans of the Department of Physics; John W. Irvine, '39, Associate Professor of Chemistry; and Professor Martin J. Buerger, '24, of the Department of Geology at M.I.T. Professor Gaudin is supervisor of the project, and H. Rush Spedden, Assistant Professor of Mineral Engineering, is its executive officer.

The new research program will extend over a period of years and is expected to advance fundamental knowledge on many subjects, such as the mechanism of flotation, the leaching of metallic ores, the reactions encountered in the smelting and refining of metals and other related processes which come under the general field of mineral engineering.

In this project many young graduates will have an opportunity to carry on scientific research in the pursuit of advanced degrees, while it will also enable more experienced men to undertake the solution of important problems in mineral engineering by employing the newer techniques in the use of radioactive substances.

New Class Marks Normal Peacetime Program

WITH the opening of its 84th academic year on September 27 the Institute returned to a normal peacetime program, the last of the accelerated war classes having been graduated on September 24.

With a freshman class of 826, the Institute's total enrollment this year will be slightly more than 5,000. In line with the Institute's prewar policy of stabilizing its student body to permit the most effective instruction, this year's freshman class is somewhat smaller than last year's.

The number of veterans in the entering class is approximately 10 per cent lower than that of last year, although with the large number of former service men still studying in the upper classes, veterans constitute approximately one-half the total enrollment. The peak of registration for these men, however, has now been passed.

For the first time since World War II, this year's students include 250 transfers from other colleges, among which are 34 from educational institutions associated with M.I.T. in a combined plan of liberal arts and technical education.

Progress in Mechanical Engineering

THE Visiting Committee on the Department of Mechanical Engineering* met at the Institute for an all-day session on April 9, 1948. During the morning, officers of the Administration and of the Department conducted members of the Committee through the various laboratories and provided an opportunity to discuss matters with various members of the Department. The later portion of the day was devoted to a

(*Continued on page 44*)

* Members of this Committee for 1947–1948 were: Joseph W. Powell, chairman, Rear Admiral Luis de Florez, '11, Norman D. MacLeod, '14, Frederick S. Blackall, Jr., '22, Ralph E. Flanders, Alexander Fraser, and Clifford Roberts.

BUSINESS IN MOTION

To our Colleagues in American Business . . .

This is a story of material standardization in which Revere played a part. It is the case of an honored company, which through the typical American process of growth through reinvestment of profits, is now making a great many different items and is known to almost everyone. It found itself buying copper alloys in a large number of widths, gauges and tempers, some of them differing but slightly. If the same material could be used for, say, six parts instead of one, there would be a gratifying saving through purchasing in larger quantities.

Revere was asked if it would like to participate in an examination of the possibilities of standardization of materials for this company. The Technical Advisory Service was given the assignment, and with the full cooperation of the customer's engineering and production heads, made a study that resulted in a confidential report covering 74 pages. Out of 360 parts, changes were suggested in gauges, lengths, tempers and alloys for 225.

Let us quote from a speech by one of the company's engineers to his sales department. Referring to one type of product, he said, "By changing slightly the widths and thicknesses of various brass and bronze strip used in the pressroom, we were able to reduce eleven sizes to one each of brass and bronze . . . That has been done, of course, without affecting in any way the functioning qualities, durability or sales appeal . . . And how do we benefit? We now have two material requirements instead of eleven, two purchase orders, two follow-ups, two items of inventory to store and count, and many other paper short-cuts, as well as labor and handling economies.

"Further, the reduction in number of sizes makes possible a reduction in inventories of materials, with all the direct and indirect savings thereby brought about.

"Finally, perhaps the greatest gain in a survey of this kind is that it requires the analysis of products and production processes as a whole. It is directly opposed to piecemeal planning and instead requires over-all cooperative effort which usually leads to savings otherwise overlooked.

"Simplification of materials is no front-page method of slashing costs or inducing production to soar. Instead, it is sound engineering which pays modest but worthwhile dividends while maintaining or improving quality."

Because in some cases new equipment is needed, the full effect of this standardization program has not been felt as yet, but already savings of $25,000 are in sight this year. Revere is exceptionally proud of this study, yet after all, its results were made possible only by the cooperation of the customer, who was eager to take full advantage of our knowledge.

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THE INSTITUTE GAZETTE

(*Continued from page 42*)

discussion of those matters which will, in the opinion of the Committee, best further the important work of the Department.

The Committee believes that members of the Department have a dual responsibility: (1) to constantly improve their teaching methods in order to provide the best inspiration and training for students with whom they come into contact; and (2) to promote their own professional standing by advanced study, by conducting research and consulting work, and by taking an active part in the activities of their professional societies and of the Faculty. It is recognized, that these objectives may, at times, be conflicting.

As a result of its visit and discussion with members of the Department, the Committee offers the following report on the present laboratories and facilities of the Department:

The present quarters for the Machine Tool Laboratory are thoroughly inadequate to meet the present needs of students in Mechanical Engineering. It is very important, therefore, that the new Machine Tool Laboratory be completed at the earliest possible moment. It is understood that some progress has been made toward raising the necessary funds for this building. Upon its completion, the present operations of the Machine Tool Laboratory now in Building 3 should be transferred to the new site, to leave more nearly adequate space in Building 3 for the Department's other work. The progress in installing new tools in the Machine Tool Laboratory was noted and the problem of storage and insurance on the remaining tools, which runs into a very considerable annual sum, was explained to the Committee.

The availability of space, equipment, and facilities for the advanced instruction was strikingly apparent in the Gas Turbine and Sloan Automotive Laboratories which serve as admirable examples for technical instruction. In contrast to the situation in the Sloan Automotive and Gas Turbine Laboratories, equipment in some of the older laboratories was apt to be crowded and generally not as modern as is now desirable. Some improvement can be made with existing equipment through improved illumination.

The relative place of undergraduate and advanced work in institutes sponsoring research was discussed with the staff. It is gratifying to observe that such research at M.I.T. leads to increased practicability of graduate work. The rapidly widening field of knowledge, which cannot be covered in the undergraduate course, and the increased demand of industry for better trained men, seem to point clearly to the necessity for the greatest attention to this branch of the Institute's instruction. Certainly facilities should be available to all qualified M.I.T. graduates who may offer to undertake additional courses leading to master's and doctor's degrees.

(*Continued on page 46*)

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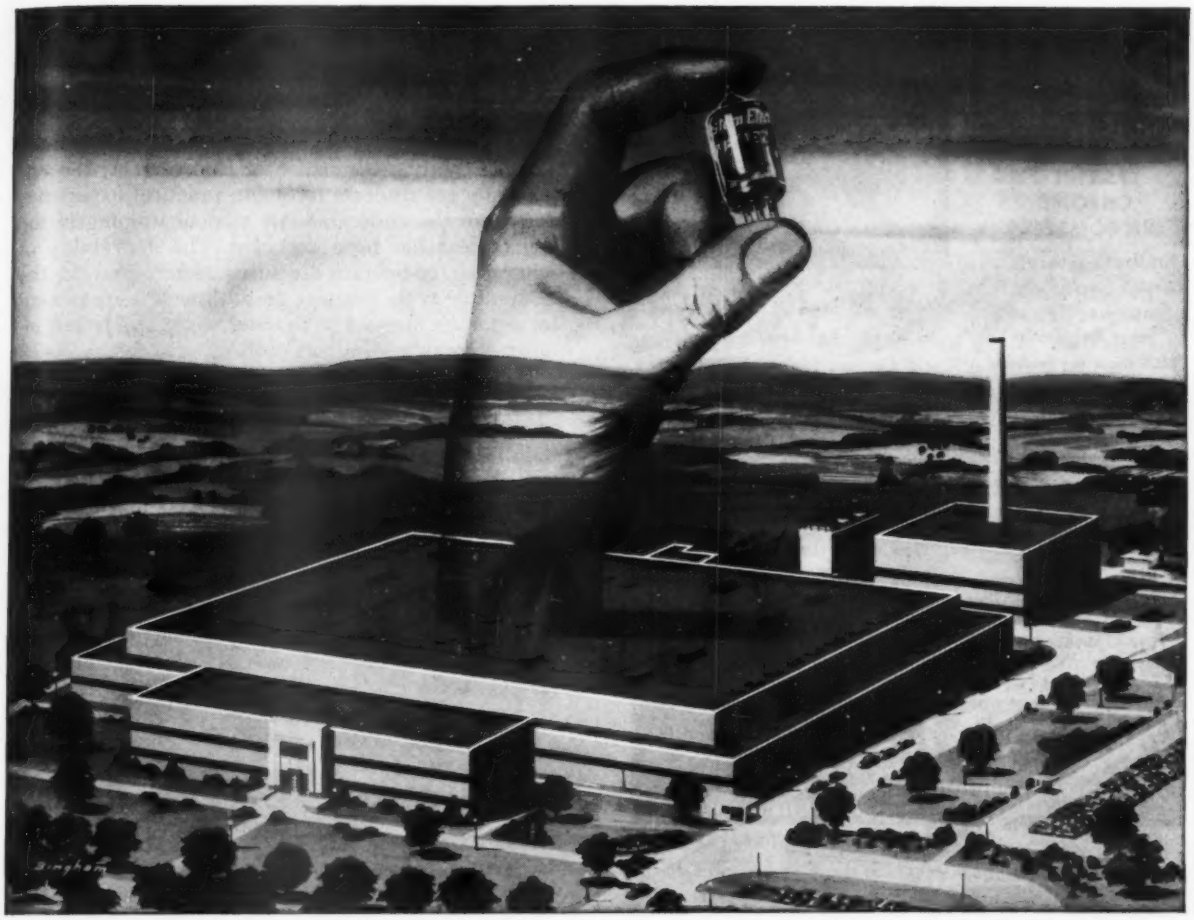

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THE INSTITUTE GAZETTE

(Continued from page 44)

Since the discontinuance of Course II-A, the opportunity for students to obtain practical experience as part of the undergraduate student training in the Department has been curtailed. The desirability of reinstating co-operative courses seems clear to the Committee with, perhaps an additional requirement for a certain amount of summer work in selected industries for other students of this Course.

Professor Jerome C. Hunsaker, '12, outlined to the Committee his proposal for two years of graduate work in required courses and leading to a master's degree. Such work appears extremely desirable in the training of men who expect to design aeronautical engines, steam turbines, and other complicated machinery, such as printing presses and paper machines. The inclusion of additional work in the humanities could well be considered with a view to broadening the training so that the graduate of a fixed course would not be too closely bound to a single field. Your Committee believes that such set courses will be of benefit to the student and to the Institute, and that such restricted courses are an advantage to the student whose narrower point of view does not enable him to choose as wisely as can the Faculty for the best preparation for work in a given field.

Beginning with the academic year 1948–1949, Option 2 of Course II has been changed to cover the subjects of materials, design, and manufacturing. The proposed activities in metals cutting, in machine tool design, and in friction phenomena will add to the professional nature of the work offered by the Department, particularly in the Graduate School. The proper co-ordination of all of the Department's courses will be facilitated when the new Machine Tool Laboratory is established. It is important that instruction be planned so that fundamental science precedes the more professional work, and this problem has been met in a satisfactory manner. It is often necessary, however, to base instruction in design on fundamental science courses that are being studied simultaneously. This should be kept in mind in any further modifications of the undergraduate program, to insure that the necessary foundation work precedes this design course, so far as this may be found to be possible.

The Committee was informed that five lectures would be delivered to the sophomore class between April and June, 1948, to orient them in their selection of future courses. This is a most desirable arrangement and should be of great value to the students in choosing their professional studies wisely.

The Committee was impressed by the intelligent treatment by the Department staff of all of the various subjects discussed, by the deep interest of its members in their various courses, and by the open-minded consideration and discussion of the various problems that came to the attention of the Committee. Such spirit is the best possible guarantee that outstanding instruction is offered to Technology students.

(Continued on page 48)

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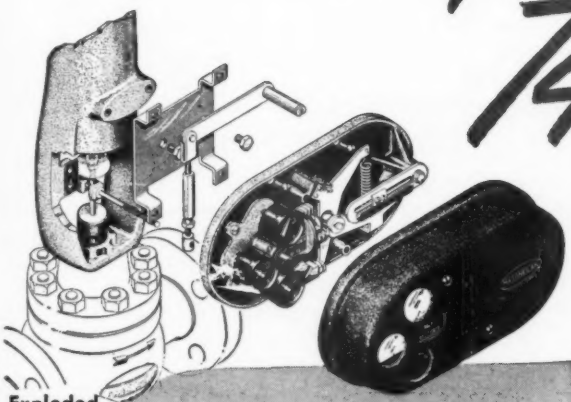

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THE INSTITUTE GAZETTE

(Continued from page 46)

Committee Report on Geology

IN a sense this is a report of two Visiting Committees on the Department of Geology,* each of which dealt with the future of the Department of Geology at M.I.T. The 1947 Visiting Committee was told that Professor Warren J. Mead, Head of the Department, would reach retirement age in June, 1949. In view of the relatively small size of the Department, and the many financial problems of the Institute that stem from the expansion of other larger departments, it seemed logical that both Committees consider whether or not the Institute should continue a Department of Geology, and if so, whether it should include both undergraduate and graduate departments or specialize only in one field—presumably that of graduate instruction.

Science is making tremendous contributions to the knowledge of the phenomena that occur around us on the surface of the earth, in the air above us, and even in the universe of which we are a part. In such a world, the Committee feels that there is no reason to believe that we should discount the future contributions of science to the knowledge of what lies below the ground and its importance to coming generations. It was felt that the contributions of geology during the next 25 years should eclipse in importance those of its entire past, and that the enrollment of geology students shows an appreciation of the modernization that has been taking place.

In this year's meeting it was emphasized that while geology needs the new tools available to it from other branches of science, the country needs, perhaps even more, the production which the new geology will certainly make possible. On the one hand, the need is for more and more liaison and interchange – of the type now given by electronics and nuclear science – in the solution of many problems of applied geology. On the other hand, geology is of fundamental importance to our whole economy, and unless geology provides new methods and tools, we will run out of the mineral resources on which our civilization is based. Without new mineral deposits, our industrial civilization cannot continue. Further research in geophysics is needed to improve old and to find new tools for use in the discovery of urgently needed oil.

The Committee feels, therefore, that M.I.T. should continue graduate and undergraduate instruction and research in geology. The Committee agrees with the Administration that, if this is to be done, our Department of Geology should be second to none.

(Continued on page 50)

*Members of this Committee for 1946–1947 were: Bradley Dewey, '09, chairman, Louis S. Cates, '02, Francis J. Chesterman, '05, Norman L. Bowen, '12, William H. Callahan, '26, William O. Hotchkiss, and Neil Rice.

Members of this Committee for 1947–1948 were: Bradley Dewey, '09, chairman, Louis S. Cates, '02, Francis J. Chesterman, '05, Norman L. Bowen, '12, Victor Dolmage, '17, Thomas B. Nolan, and Neil Rice.

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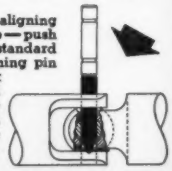

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THE INSTITUTE GAZETTE

(*Continued from page 48*)

The Committee discussed the problem of making opportunities in the Department, and in the geology profession, better known to entering students so that the selection of students in geology could be broadened. The Committee felt this to be important to the future of the Department, and recommends that the importance of modern geology to our whole economy be emphasized. It is felt that every attempt should be made to make the requirements for joining the Department as flexible as possible, to the end that students who have some training in other fields may be given the opportunity to change to the Course in Geology if, and when, it is shown that this field represents their true choice.

The Committee also recommends that more emphasis be placed upon the teaching of engineering geology, particularly to civil engineers. The training in geology would be many-fold more useful to civil engineers were the present undergraduate Course expanded from two lectures plus one two-hour laboratory period each week for one term, to three lectures plus two laboratory periods. It was felt further that an effort should be made to develop and offer engineering geology as a professional elective and to offer advanced courses in engineering geology to graduate students in other fields.

Professor Mead presented a full report on the state of the Department and outlined the research problems and fields of research covered by the various members of the staff. The Committee was impressed by the way in which these problems were so integrated that the staff will bring to bear new tools upon problems which are not solvable by older conventional methods of attack. The Committee was enthusiastic about the new summer camp arrangements reported by Professor Mead, by which the Institute is allowed to send 20 students each year to work under the auspices of the Nova Scotian Government in mapping the geology of Nova Scotia. This summer camp arrangement will be

(*Continued on page 52*)

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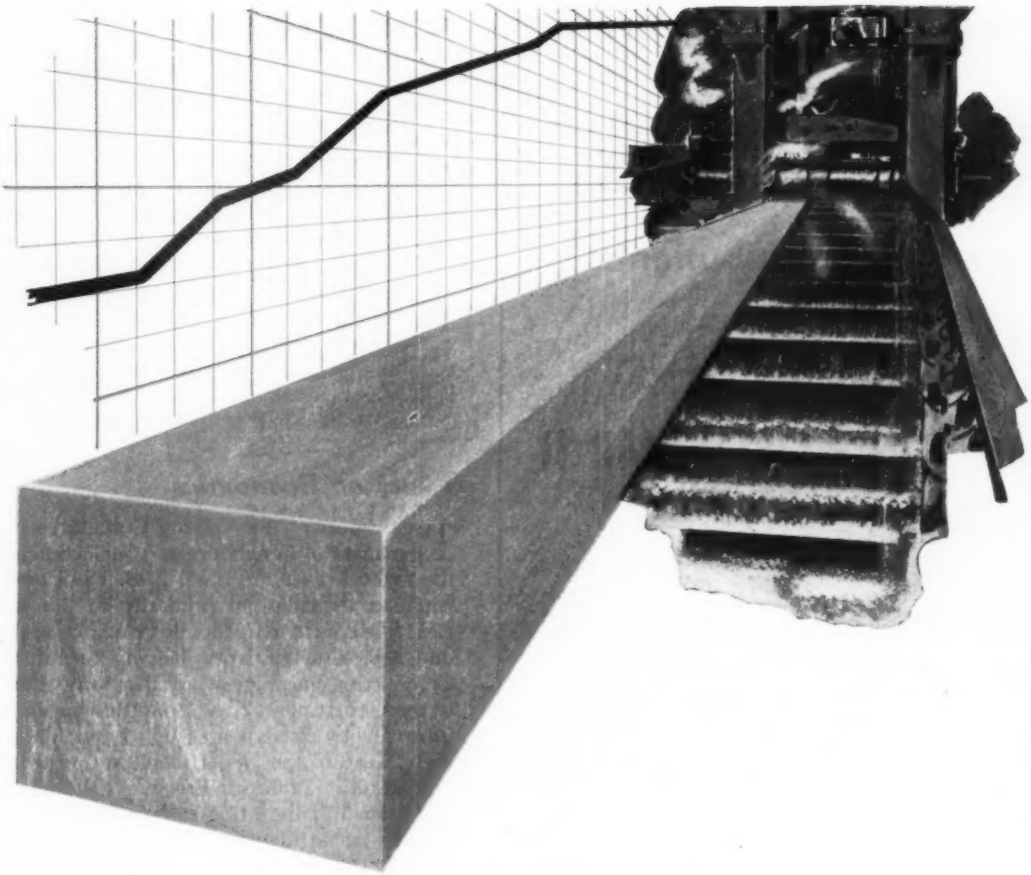

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(Continued from page 50)

required of all M.I.T. students in the summer between their junior and senior years, and will cost them $60 a year. The Nova Scotian Government will assume all expense of housing and board.

In concluding, the Committee wishes to emphasize again its conviction that, in the remodeling of the Department, serious consideration should be given to so integrate the work of the Department with that of the Departments of Physics, Chemistry, and Electrical Engineering, as to obtain the maximum value for the geology student in the other Departments.

Views on Economics

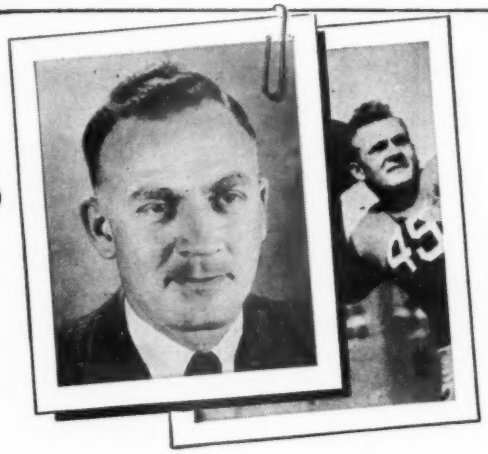
THIS report of the Visiting Committee on the Department of Economics and Social Science* covers the two years ending June, 1948. The Committee has confined its attention primarily to the teaching of Ec11, the course in Economic Principles required of all undergraduate students, leaving to future Visiting Committees consideration of the many other activities of the Department. The Committee began and ended its review by discussion with Professor Ralph E. Freeman, Head of the Department, and expresses its appreciation of Professor Freeman's thoroughgoing cooperation in submitting information and in presenting the departmental point of view. Informal talks with Dr. Compton, Dr. James R. Killian, Jr., '26, and Dr. Robert G. Caldwell were also very helpful.

The Committee read the prepublication draft of the textbook used in Ec11 entitled, *Economics: An Introductory Analysis* by Paul A. Samuelson, Professor of Economics; it likewise also reviewed the list of outside references used in the course. Various individual members of the Committee reviewed one or more doctor's theses in economics, read some recent publications by the staff and, in some instances, interviewed recent graduates. Finally, the Committee gave consideration to the statement of policy concerning the teaching of Economic Principles, which constituted Chapter IV of the booklet "Humanities and Social Sciences" published by the Institute in the fall of 1947.

The Committee found that the teaching of economics at M.I.T., in common with many other educational institutions, has been greatly influenced by the writings of the late Lord Keynes. With the objective of maintaining full employment and high consumption in our economy, the Keynesian position has historically been associated with a considerable degree of central governmental planning. The suggestion was offered to the Department that when a student is studying economic theory concerning possible benefits of more central planning, his attention might also

(Continued on page 54)

*Members of this Committee for 1947–1948 were: Walter J. Beadle, '17, chairman, Hugh Pastoriza, '07, Ellis W. Brewster, '13, Oscar S. Cox, '27, Beardsley Ruml, Charles E. Spencer, Jr., and Samuel S. Stratton. The Committee's report was signed by all but Mr. Cox who was unable to participate in the Committee's deliberations.



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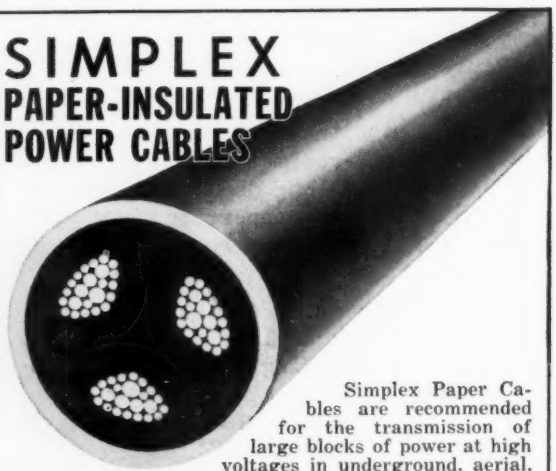

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(*Continued from page 52*)

be drawn to the following practical considerations: (1) Economic planners for the government are no less fallible than economic planners for private industry; (2) Errors by the government are likely to have more serious effects on the country's economy than errors made by individual concerns; (3) Direct economic activity by government and economic controls imposed by government may be strong deterrents to private initiative and risk investment.

The Committee also suggested that the Department give more emphasis to the incentive aspects of our economy, and to that end the Department is amending its list of required readings.

Among other things, the Committee concerned itself with the adequacy of the presentation of the principal relevant points of view, particularly from the more conservative or classical standpoints. When this was discussed with the Department and the Institute Administration, the Committee was advised that Professor Freeman has added the following clarifying sentence to the published statement of policy concerning the teaching of Economic Principles: "The textbook used in the course is supplemented by other readings which present differing points of view from those presented in the text."

The Committee believes that the published statement as clarified by Professor Freeman is a sound and acceptable statement of departmental policy. However, it is recommended that the Department, in proposing appointments and changes in personnel, give greater weight to the desirability of having differing points of view adequately represented on the Economics staff, thus promoting a more objective analysis and presentation of economic problems.

Building Engineering and Construction

On Friday, April 23, 1948, the Visiting Committee on the Department of Building Engineering and Construction* met at the Institute. The morning was spent discussing the registration for the Course, de-

(*Continued on page 56*)

*Members of this Committee for 1947–1948 were: Harry J. Carlson, '92, chairman, John H. Hession, '13, Percy Bugbee, '20, C. George Dandrow, '22, Francis A. Barrett, '24, Lou R. Crandall, and Henry R. Shepley.

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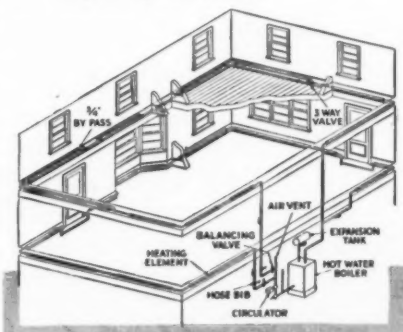

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THE INSTITUTE GAZETTE

(*Continued from page 54*)

partmental research, space requirements, staff training, and placement. After luncheon at the Campus Room in the Graduate House, the Committee visited the several laboratories connected with the Department. The Committee was pleased to have the advantage of the comments of Thomas K. Sherwood, '24, Dean of Engineering, and Robert M. Kimball, '33, of the President's Office, during the discussion.

As related to teaching staff, the registration for the Course and the number of courses offered by the Department indicate a present load which is very heavy. The Committee recommends that the Administration seek adjustment to lighten this load. The Committee is of the opinion that the quota of 30 undergraduate students per year and 10 to 15 graduate students should be maintained during the present period of need for trained engineers in the building field.

The number of different courses offered should be maintained at the undergraduate level and possibly extended at the graduate level. In addition to the courses regularly given to students registered in the Department, service courses for the School of Architecture and Department of Civil and Sanitary Engineering have shown a very heavy registration which adds considerably to the task of the instructor because of the large numbers – which have run as high as 60 or 70 students – in some of these sections. These service courses certainly should be continued and show an excellent co-ordination between the Department and other courses allied to building construction.

The Department is to be commended for its continued activity in research. The work being done in the field of plastics, in masonry materials, and in light metals is representative of the fundamental approach which the Department is using. The support which this work is receiving by grants-in-aid from the Plastics Materials Manufacturers Association, the National Lime Association, and Revere Copper and Brass, Inc. is appreciated.

The plan being used by the Department in the training of its younger staff members should be continued. The amplification of the academic activities of these young men by selective placement for several summers will be very beneficial in their future teaching and will keep the classwork up to date and stimulating to the students.

The Committee believes that the Department's present practice in assisting students in placement is most direct and should produce excellent results. The direct approach of the staff to employers in different geographical areas and with various needs is excellent, and contacts of this kind should be extended. This will not only disclose opportunities for employment but will make the Course more widely known and respected.

While the Institute has made some additional space available to the Department during the past year, it is desirable that space in Buildings 5 and 7 be made

(*Continued on page 58*)

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THE INSTITUTE GAZETTE

(*Continued from page 56*)

available for the eventual transfer of the Plastics Laboratory and for extensions of the Masonry Materials Research Laboratories. With the growing demand for undergraduate thesis work in these laboratories, and with no space whatever for the accommodation of graduate students who are doing research work in them, it is highly desirable to give such space requirements priority.

Naval Architecture and Marine Engineering

MEETING on May 19, 1948, at the Institute, the Visiting Committee on the Department of Naval Architecture and Marine Engineering* was greeted by several administrative officers of the Institute and members of the staff of the Department. Following this, an inspection of the physical facilities of the Department, including the Dewey Library and the Hart Nautical Museum, was made.

The Committee considers a towing tank, for which provision is made in the new Hydrodynamics Laboratory, a necessity for effective conduct of the Department's work. A tank, 106 feet by 8 feet and 7 inches by 4 feet deep, as proposed by the Department, is recommended by the Committee. A room in the basement of Building 5 has been assigned to the Department for a structural laboratory in which there will be installed a model stability tank. This tank will be designed by the Department and will be given by an alumnus of the Institute.

The Committee does not recommend the suggested modification of the present apparatus in the propeller tunnel at this time, but urges the postponement of any modifications until a new and larger tunnel can be built and put into operation.

The present location of the Hart Nautical Museum is excellent. The size of the Museum, however, is totally inadequate for present needs and an extension, in each direction, parallel to the building corridor, is most strongly urged. More models will undoubtedly come into the Department in the near future. Even now the Museum is unduly crowded and quite a few models which the Department has are scattered in other locations so that their full value is not realized.

The Committee not only heartily approves, but urges, the addition to the staff of a new assistant professor of marine transportation for this Course. It is the considered opinion of the Committee that this Course is bound to increase in importance and it should be in a position to supply an enlarged future demand for its graduates.

The Committee notes with pleasure the plan to have the students in the three Courses, XIII, XIII-A,

(*Concluded on page 60*)

*Members of this Committee for 1947–1948 were: William S. Newell, '99, chairman, Ellis W. Brewster, '13, Roy W. Chamberlain, '31, Eugene P. Worthen, '32, Victor M. Cutter, Vice Admiral Earle W. Mills, and John E. Slater.

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THE INSTITUTE GAZETTE

(*Concluded from page 58*)

and XIII-C, brought into closer and more intimate association with one another.

After lunch at The Graduate House, with the entire staff and members of the Administration, the Committee deliberated and discussed problems of the Department which were brought to its attention.

The Committee interviewed members of the staff individually, to obtain their opinions on their own work as related to that of the Department. The Committee thus feels that it made a good survey of the Department's activities.

Attention is called to the fact that this Department is by no means the smallest in the Institute as it once was. Based on the number of enrolled students, the Department is now of medium size at the Institute.

The Committee is glad to report to the Corporation that the Institute and the Department of Naval Architecture and Marine Engineering are very fortunate in having Vice Admiral Edward L. Cochrane, '20, as head of the Department. He brings with him a rare administrative and engineering ability which will measurably increase the prestige of the Institute and the Department, and his plans for the future are most encouraging.

TACKLING TECH

To supplement the annual Freshman Camp in acquainting new students with the Institute's history, objectives, and methods – and to remind the reader that M.I.T. is a place where formal technical training is combined with cultural activities, sports, and recreation in developing high school graduates into mature, self-reliant individuals – the Institute has recently published a 90-page volume entitled, *Tackling Tech*. This handy 5½ by 8 inch book, described as "a student guide to the Massachusetts Institute of Technology," is useful to all to whom the Institute's activities may be vague. It makes inviting reading with its informal style and delightful drawings by Henry B. Kane, '24.

In *Tackling Tech* the reader may learn of strange and wonderful things at the Institute. He is informed that the Institute offers more than 1,200 subjects of instruction, that a well-known professor of mathematics formerly pitched for the Cincinnati Reds, that a professor of aeronautical engineering has won awards for his poetry, and that if the Institute had been built at its present location in 1775, students would have to reach their classrooms by rowboat. Although intended primarily for students, *Tackling Tech* recalls that the Alumni Placement Bureau annually handles 3,000 employment cases, helping Alumni and industry find each other. There is a section on "The Boston Area," and if the student overlooks the text on historical spots and museums, he quickly familiarizes himself with the list of girls' schools given on pages 80 and 81. Finally, for those desiring more information about the Institute, *Tackling Tech* concludes with a list of references on the past, present, and even the future of M.I.T.

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THE TREND OF AFFAIRS

(*Concluded from page 20*)

Typographically Speaking

PUSHED off the first page of the Trend of Affairs by the recent action of the Corporation in voting new offices for Drs. Compton and Killian is the announcement of a change in printing facilities for The Review. Possibly many readers will already have observed the changes in typography, trim size, and layout which are reflected in this issue. With The Review completing half a century of continuous publication, certain changes in this direction were due in the normal course of events, but those now in effect already represent the influence of co-operation between The Review and its new printer, E. L. Hildreth and Company, Inc., of Brattleboro, Vt.

For almost a quarter of a century The Review has been printed at the Rumford Press in Concord, N.H. During this period The Review showed its greatest growth, not alone in size of issues, but in excellence of typography, layout, and editorial content, and it rose to an outstanding position in the field of alumni periodicals. It is a pleasant task to acknowledge the helpful co-operation of members of the Rumford Press, not alone in Concord, but especially in Rumford's Boston Office, which was often called into consultation on production problems during this important period in The Review's history.

During the past quarter century, The Review's expansion was especially noticeable in the amount of composition to be set each month. At present the amount of copy to be set for Class and Club Notes alone is equivalent to that of a full-length novel, and the editorial copy for the rest of the issue runs to at least 20,000 words each month. In the same 25-year period, the Rumford Press, likewise, expanded its facilities in conformity with the trend of most magazines toward very long press runs and relatively little composition, as judged by operations of The Technology Review.

It is not without regret that changed conditions in the postwar period made it desirable for The Review to seek a new printer; there is something pleasantly nostalgic about the slick 70-pound coated paper, fine half-tone reproductions, and close personal contact which characterized the production of The Review in earlier years.

In the last analysis it is up to the reader to determine the acceptance and welcome accorded to The Review when it enters his home or office each month. We shall strive, as always, to make the editorial content of interest to Technology Alumni, and to maintain the quality set by our predecessors. In this task we are confident that we shall enjoy the wholehearted co-operation of E. L. Hildreth and Company, Inc., and we look forward to the same pleasant relations with this firm as have always marked our association with The Review's printer.

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INTERNATIONAL RELATIONS

(*Continued from page 36*)

dent and sickness, health insurance was obtained for each student during his period of stay in Cambridge. The facilities of the Medical Department and of the Homberg Infirmary were available to our visitors on the same basis as they are available to regular M.I.T. students. Service of the Medical Department was either gratis or covered by health insurance provided by the Foreign Student Summer Project, so that there was no cost to the foreign student for these facilities. All were given x-ray examinations upon their arrival, but as a group they were remarkably healthy throughout their stay in the United States.

For the most part, the foreign students represented an unusually high caliber of individual. All of them were graduates of technical institutions or the equivalent; in addition there were many with considerable industrial experience.

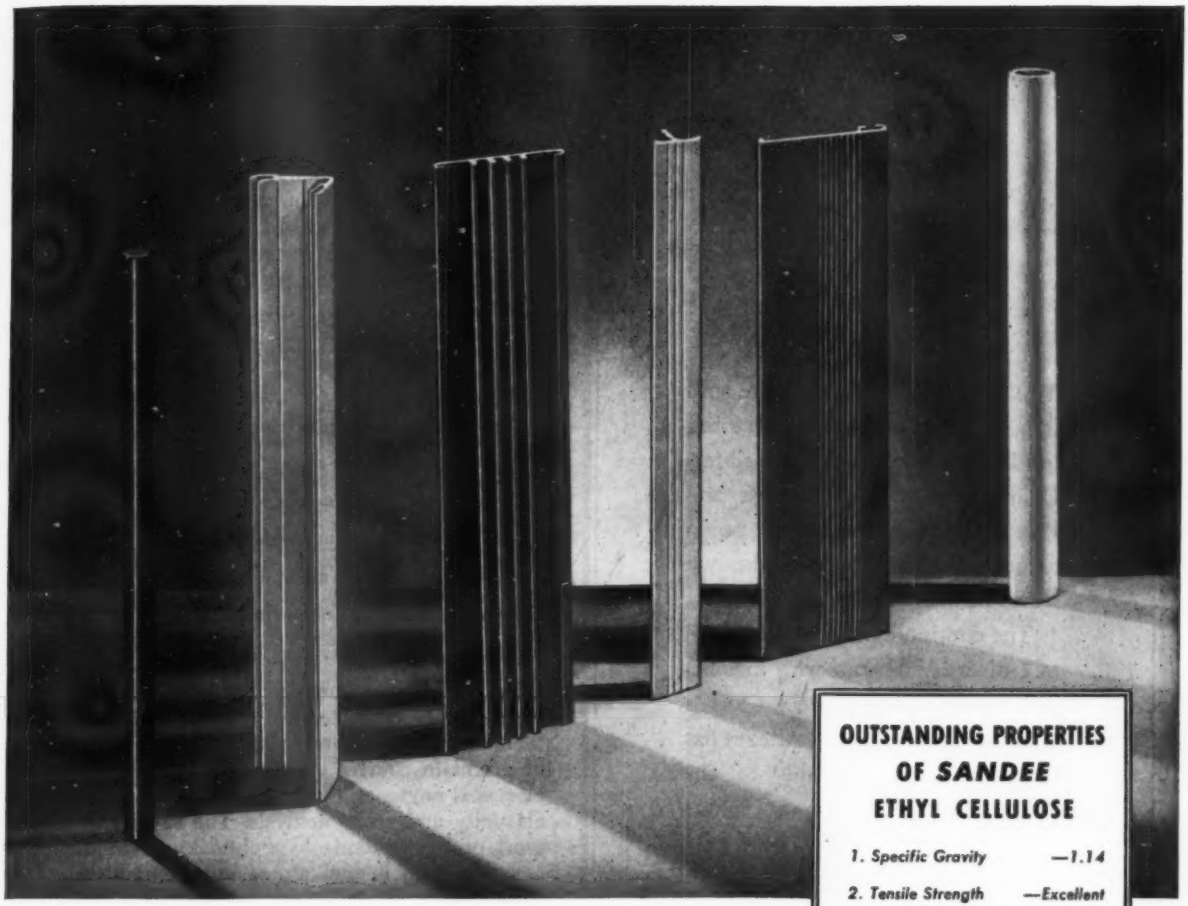
From an administrative point of view it was important to register these students as listeners only and not to require them to study for credit. This made for greater freedom in the selection procedure, and for greater flexibility in their M.I.T. programs. Students in this project were not required to fulfill the prerequisites expected of a regular student but could register for any subject from which they might hope to benefit. Nevertheless, the summer session at M.I.T. presented a serious problem for them, since not all subjects on the graduate level were offered in the 1948 summer session. The planners of the project were aware of this dilemma, but only in the summer were living accommodations available.

Studies Taken

A number of these graduate students took substitute subjects which often proved as valuable as the subjects originally selected. Some of them, for example, took courses in economics, business administration, and production methods. In the latter case, they were exposed to American practices which often differ from practices in Europe, but which were valuable for the very reason that such courses are not available in European engineering schools. Others took courses in the humanities or the social sciences. One Finnish student in architecture worked on the design and architectural details of the new Senior House; another electrical engineering student obtained valuable experience with the differential analyzer and will have charge of the construction of such a calculating machine for his own university.

Through the generous interest of the Institute staff, several students were allowed to participate in research projects already under way. One worked on a problem in the flutter research laboratory of the Department of Aeronautical Engineering, and one helped in the building of a Van de Graaff generator. These students were all exceptionally good ones, well advanced in their fields, and were in a position to make valuable contributions to their projects.

(*Continued on page 66*)



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INTERNATIONAL RELATIONS

(*Continued from page 64*)

It is difficult to give an accurate and concise outline of the subjects which the foreign students took at the Institute. The table of professional fields and general subjects selected at M.I.T. by this group, and reproduced below, may be indicative of the range of interests represented by our summer guests.

FOREIGN STUDENT SUMMER PROJECT
TALLY BY COURSES

Course	*Number of Foreign Students Registered*
I — Civil Engineering	8
II — Mechanical Engineering	9
III — Metallurgy	1
IV-A — Architecture	5
V — Chemistry	5
VI — Electrical Engineering	20
VIII — Physics	4
X — Chemical Engineering	3
XII — Geology	1
XIII — Naval Architecture and Marine Engineering	1
XVI — Aeronautical Engineering	5
Total	62

By and large, students in electrical engineering were able to take courses in their own field and of their selection, since a reasonably extensive number of graduate courses were offered in this field. One electrical engineering student took courses in photoelasticity and stress analysis. The same was true of most of the students in architecture. On the other hand, students in civil or mechanical engineering took some courses in economics and production. Students in chemistry and chemical engineering took some courses in their professional fields, but frequently found interesting courses in molecular structure, electronics, and nuclear physics. A student in Naval Architecture took related courses in machine tool laboratory, gas turbines, internal combustion engines, dynamics, and experimental stress analysis. The registration, by departments, of the foreign students is given in the table of Foreign Student Summer Project Tally by Courses.

A number of students enrolled in subjects in the Institute's Division of Humanities and were very much impressed by these subjects, since in European technical schools no courses are given in the humanities or the social sciences. A considerable number of the group hold junior staff positions in technical universities abroad, and it was this group which perhaps felt they had gained most from their studies at the Institute. They were all grateful for the opportunity to observe teaching methods different from their own, and a number have stated they intend making a formal report to their own institutions on M.I.T. methods, with recommendations for the adoption of many.

The students themselves have felt that they learned in many ways aside from the formal classroom instruction. They were all impressed with the Institute's laboratories, where materials and equipment were in much greater supply than in their own laboratories, and they felt they had profited greatly by observing

(*Continued on page 68*)

MEMORANDUM

Case No.: L-394 Date: September 20, 1948

From: W. J. Smith

To: T. L. Wheeler

Subject: Desirable Characteristics of a Beginning Research Laboratory Worker on Industrial Problems and Products.

AGE: A new or recent graduate. A few years of experience would not be objectionable, but the man should be young so that he can be trained into our way of working.

EDUCATION: A B.S. in Chemical Engineering. A graduate degree does no harm if the man fits it and doesn't take it too seriously. He need not be a ØBK or an intellectual prima donna. Ordinary sound intelligence and common sense has been found suitable for practical work.

RESEARCH ABILITY: Must be observant so that facts are seen accurately. Should be alert to the unusual. Ingenuity is needed to carry out uncommon procedures and to overcome difficulties when they arise. Must be able to do a fair share of his own thinking.

PERSONALITY: A friendly disposition is indispensable. He will need the help and cooperation of other people. He can't afford to antagonize anyone. Sooner or later he will work with clients. A cheerful outlook will come in handy.

ATTITUDE: Must genuinely enjoy experimental work so that it takes first place in his interests. Such a man will be a self-starter and furthermore he won't expect to "graduate" out of the laboratory in a year or two.

SPECIAL ABILITIES: Because of the unpredictable nature of the assignments a worker must be able to devise and improvise pieces of equipment as needed. Therefore, good mechanical aptitude is a must. It is a serious handicap to progress if a man can work only as tools are placed in his hands.

ABILITY TO WRITE: Eventually, nearly all laboratory work must be written into a report for the benefit of some outside person or group. Details are best described by the individual who actually has done the work. He should be able to describe his results clearly and in acceptable English.

W. J. Smith

ARTHUR D. LITTLE, INC.

WJS:abm

This job specification was prepared for us by one of our group leaders seeking an assistant. We believe it a good, concise summary of requirements, both in our own operations in chemical engineering, mechanical engineering, biology, physics and chemistry, and in research laboratories generally.

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INTERNATIONAL RELATIONS

(*Continued from page 66*)

experimental techniques. Many of them found our libraries particularly helpful and were eager to be brought up to date on literature not available in their own country.

Nor did all of the benefits of the project accrue to our guests of the summer. A professor of international relations called this summer's class the most interesting he had conducted because of the participation by foreign students. Our own student body benefited from contacts with Europeans, and a considerable amount of good will was developed on both sides of the Atlantic by the project.

In spite of difficulties and complexities, and in spite of a very demanding, and a very worthwhile extracurricular program, the students of the project found it a very stimulating and enriching experience. One of the students from Greece, writing to the Administration of the Institute in appreciation of the project, has written in part:

> The whole project, as it is, is almost perfect. It is true that only a few courses were offered this summer but even if we did not find exactly what we wanted, I am sure that the experience acquired as a whole is worthwhile. I think that it is more important to see the way problems are faced

(*Concluded on page 70*)

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INTERNATIONAL RELATIONS

(*Concluded from page 68*)

in America than to learn a few things in the lectures. To that we must add the fact that we could never find in our countries laboratories as rich and as well equipped as those at M.I.T.

In spite of some mistakes which have been made in this interesting program of international relations, we feel the project was sufficiently successful that, in one manner or another, it should be continued in the future. A program such as that outlined is a specialized one and could not hope to meet the needs of the 15,000 or more students who come to the United States each year for regular courses of instruction in our universities and colleges. Still, the experience of the 62 European students who came to M.I.T. for a summer of study gives ample indication of the value of such a program to those who are fortunate enough to be able to take part in it. If our European guests benefited from this project so also did those members of the student body, Faculty, and staff who took part in the project in one way or another; there were benefits for those living on both sides of the Atlantic.

It is the hope of those who came into close contact with the administration of this project that other colleges and universities will be able to join in continuing the M.I.T. Foreign Student Summer Project plan which has, as its major objective, the enrichment of international relations through better knowledge and understanding of students in different parts of the world. It is only through mutual trust and understanding, to which this project made a very real contribution, that we may expect to look forward to the universal peace which the people of the world so much desire.

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TECHNICAL PUBLISHING TODAY

(*Continued from page 33*)

ing successful companies and individuals to put into book form for the benefit of society the details of their own experience records. One example is the three-volume series in sanitary engineering by the internationally known firm of Metcalf and Eddy of Boston.

The third type of operation is as follows: After World War I, an impressive result of co-operation between large groups of scientists from many countries was published in four languages – the eight volumes of the *International Critical Tables of Numerical Data, Physics, Chemistry, and Technology*. Programs of this type show promise of becoming increasingly valuable as time goes forward.

Just after the conclusion of World War II, announcement was made of the 27-volume group of books to come out of wartime research at the M.I.T. Radiation Laboratory, in which 500 authors took part in preparation of manuscript material. Approximately half of these volumes have already appeared, and the remainder appear at the rate of more than one volume each month. The circulation of this impressive series of volumes has been double that which was initially estimated, and 45 per cent of sales are made in foreign countries.

Nuclear Energy Series

A climax in co-operative effort, and one that outstrips even the two series cited above, in international significance is the Manhattan Project Technical Section of the new National Nuclear Energy series which the Atomic Energy Commission recently announced for publication. The first volume, published in September, describes the histopathological effects of radiation. These volumes will be of fundamental importance in medicine, physics, agriculture, power, metallurgy, and many other fields. In all, it is expected that approximately 60 volumes will be made available for public distribution over the next two years.

These volumes will cover declassifiable research and development results obtained at all major installations of the Manhattan District, U.S. Army Engineers, and the Atomic Energy Commission, including the Argonne National Laboratory, Oak Ridge National Laboratory, Los Alamos Technical Laboratory, and many others. That part of this new knowledge which is not withheld for security reasons will become widely available to scientists through the National Nuclear Energy series.

Unique in the nuclear energy project is the process of direct reproduction of manuscript which is prepared by typewriters that justify marginal lines of type that are identical with standard book page type, with results that are faster and slightly less expensive than normal.

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M. I. T. BUILDINGS

(*Concluded from page 30*)

Street in Cambridge. Plans for this unit have been completed, but lack of funds are, at present, holding up construction.

The Department of Biology is now occupying relatively small quarters in Building 10, but the rapid growth of quantitative biology and its close association with developments in electrical engineering, nuclear science, and mathematics make necessary a new building for the Department of Biology. The need for greatly enlarged facilities in biology is clearly recognized and funds are being sought for a new structure to be built east of the main group of academic buildings, and connected with Building 8.

Plans have also been made for the construction of a laboratory for nuclear science and engineering to connect with Building 8 on the Institute lot. This building is urgently needed because of the vast importance which nuclear energy is expected to play in the health and general welfare of citizens in all parts of the world.

Dignified club facilities with dining rooms, meeting rooms, lounges, and recreational rooms have been sought for the use of the Faculty for many years. A faculty club would represent a very much needed improvement in the vicinity of M.I.T. Such a club is projected and will be built as soon as funds become available.

There is every reason for confidence that the facilities now under construction or projected will make as effective a contribution to the new era now unfolding for Technology as those described in this survey have been instrumental in shaping the Institute's influence and activities for the past 32 years. Never before has the Institute's prestige been higher and the outlook for the future is more than encouraging. But no amount of physical facilities can take the place of outstanding personnel. The success of the Institute's future depends upon the quality of scholarly leadership of the Faculty, staff, and students who will use the physical facilities of Technology. It is gratifying to recognize that this subject has received the same careful consideration as has been devoted to improving physical facilities at M.I.T.

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MAIL RETURNS

(*Concluded from page 10*)

Accreditation Association was established about a year ago with Dr. Wada as its president. Beginning next year all the colleges and universities here will be chartered under the new system which is familiar to you.

Tokyo Institute of Technology was founded in 1929 by the government after its earlier existence as a trade school, and later technical school for nearly 50 years in all. At present T.I.T. is the only one of its kind in Japan, and it will be an institute of four-year courses beginning next year. We shall admit 300 first-year students, and in due time, we would like to have a graduate school.

We have now reached the stage where we have to decide on proper distributions of the corps of instructors among science, engineering, architecture, and humanities. Until a few years ago we had only one professor each in mathematics and physics. I shall be very happy if I could learn your opinion on desirable and necessary allocations of the staff among those various schools and divisions. The second problem of prime importance is how to maintain inspiring teaching members. Would you kindly teach us your procedures in appointing professors and others? In order to convey and transplant an M.I.T. spirit in Japan, I have written two books and several articles.

For a long time I have been out of touch with M.I.T., which has been enjoying the golden age under your presidency. With much admiration I have been studying your *President's Reports*. If I am not asking you too much, I should like to have your *Reports* since 1941, and other bulletins covering the period since 1938. Since last May I have been able to receive printed matter directly from the States.

It gives me joy to mention that Harry C. Kelly, '36, Deputy Chief of Scientific and Technical Section, E.S.S., GHQ., has given so much of his time to the reorganization of Japanese science. His untiring work will be long remembered with our hearty gratitude.

In the stupendous work of reconstruction of my country, I believe that Tokyo Institute of Technology must play a very important part, which is, however, accomplished only by your sympathetic guidance based on the experience, the wisdom, and the vast knowledge of the 18 years' presidency of M.I.T.

With my best wishes to you and your staff.

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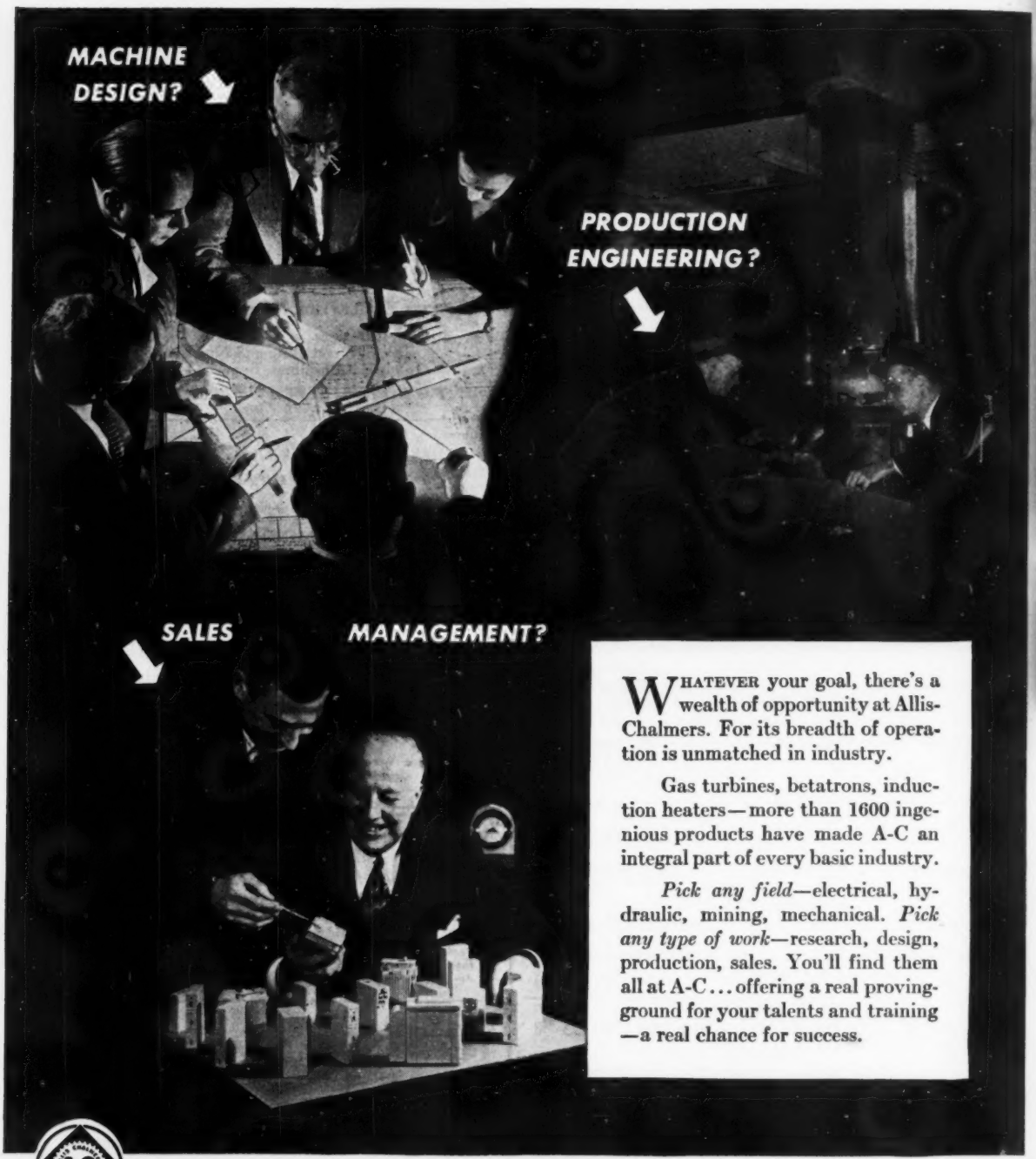

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